Von der Theorie in die Praxis: Konzeption, Umsetzung und Wirksamkeitsüberprüfung einer individuellen Sportberatung

Inauguraldissertation

der Philosophisch-humanwissenschaftlichen Fakultät

der Universität Bern

zur Erlangung der Doktorwürde

vorgelegt von

Nina Schorno

Gächlingen, SH und Steinen, SZ

Selbstverlag, Bern, 2021

Von der Philosophisch-humanwissenschaftlichen Fakultät der Universität Bern auf Antrag von Prof. Dr. Achim Conzelmann (Hauptgutachter) und Prof. Dr. Alexander Woll (Zweitgutachter) angenommen

Bern, den 15.11.2021 Der Dekan: Prof. Dr. Stefan Troche

Dank

Während meines Doktorats am Institut für Sportwissenschaft der Universität Bern konnte ich thematisch in das eintauchen, was mich interessierte. Einige Personen haben mir diesen Weg möglich gemacht. Ihnen spreche ich hiermit meinen Dank aus:

Zuerst danke ich Prof. Dr. Achim Conzelmann für die Gelegenheit, ein Teil seines Teams zu sein. Ich habe stets seine Wertschätzung gespürt und bekam das Vertrauen, die Projekte mit eigenen Ideen zu füllen. Seine offene Türe half mir, Hürden abzubauen und Probleme frei adressieren zu können, um sie auszudiskutieren. Merci, dass ich herausfordernde Aufgaben gestellt bekam, an denen ich wachsen konnte.

Einen zusätzlichen Dank möchte ich Dr. Julia Schmid aussprechen. Von ihr konnte ich während meines Doktorats enorm viel lernen; sei es, wie wissenschaftliche Erkenntnisse und theoretische Ideen verständlich erklärt werden, wie hilfreich das Selbstregulationstraining ist, wie man Aufgaben von vorne bis hinten durchdenkt und wie man lernt, an sich selbst zu glauben. Zudem hat sie mir Teamführung auf Augenhöhe und Mitsprache vorgelebt. Ich habe das Arbeiten, Schreiben, Reflektieren, Lehren sowie das Lachen mit ihr sehr geschätzt und mich gerne von ihr leiten und unterstützen lassen.

Merci an euch, meine (Büro-)Kolleginnen und (Büro-)Kollegen: Roland und Vanessa, Merlin und Michael, Claudia und Sofia und das Team der Abteilung Sportpsychologie und Forschungsmethoden. Ich denke gerne an unsere legendären 10 Uhr-Kaffeepausen am Institut mit euch zurück. Ich habe es genossen, mit euch zu arbeiten, universitäre Probleme zu teilen, gemeinsam an einem Strick zu ziehen und mit euch zu lachen: Ihr seid mir alle ans Herz gewachsen.

Danke auch an Lukas, der meinen Arbeitselan akzeptiert, meinen Problemen und Freuden zugehört und mich auch in schwierigen Zeiten des Doktorats an das Positive erinnert hat. Ich bin dankbar, das Leben mit ihm zu teilen. Und Merci, Mami, Jan und Dad, ohne euch wäre ich nicht da, wo ich jetzt bin. Ihr habt mir den Rücken gestärkt, mich bei wichtigen Entscheidungen unterstützt und mich einfach machen lassen – ich spüre eure Unterstützung stets.

Ein Dankeschön gehört auch meinen engen Freundinnen, die mich auf diesem Weg begleitet haben. Ihr habt mich mit euren kritischen Fragen reflektieren lassen, aber vor allem habt ihr mir positiv zugeredet und mich motiviert, meinen eigenen Weg zu gehen.

Folgende drei Beiträge werden zur kumulativen Dissertation eingereicht:

(1) Schmid, J., Schorno, N., Gut, V., Sudeck, G., & Conzelmann, A. (2020). "What type of activity suits me?" Development and implementation of the exercise and sport counselling approach COMET. *Zeitschrift für Sportpsychologie*, *27*(4), 127–138. https://10.1026/1612-5010/a000309

(2) Schorno, N., Sudeck, G., Gut, V., Conzelmann, A., & Schmid, J. (2021). Choosing an activity that suits: development and validation of a questionnaire on motivational competence in exercise and sport. *German Journal of Exercise and Sport Research*, *51*(1), 71–78. https://10.1007/s12662-020-00698-z

(3) Schorno, N., Gut, V., Conzelmann, A., & Schmid, J. (2021). Effectiveness of individual exercise and sport counseling based on motives and goals: A randomized controlled trial of the COMET approach [Manuscript submitted for publication]. Institute of Sport Science, University of Bern.

Inhaltsverzeichnis

1 Einleitung

Der Sport ist ein relevanter Faktor für die physische, psychische und soziale Gesundheit des Menschen (z. B. Sudeck & Thiel, 2020). Tatsächlich wird Sport als eine Art *Wunderpille* bezeichnet (Pedersen & Saltin, 2015; Sallis, 2009; Swisher, 2010). Sportlich aktiv sein wirkt präventiv auf die Entstehung von verschiedenen Erkrankungen (u. a. Demenz, Übergewicht, Diabetes Typ 2, Bluthochdruck oder Krebs) (McTiernan et al., 2019; Penedo & Dahn, 2005; Reiner et al., 2013; Warburton & Bredin, 2017). Auch zeigen Studien, dass das Ausüben von Sport ein verbessertes subjektives Wohlbefinden, eine bessere Lebensqualität sowie ein erhöhtes Selbstwertgefühl mit sich bringt (Ekkekakis & Backhouse, 2009; Penedo & Dahn, 2005) und einen positiven Effekt bei der Behandlung von Depression, Angst und Schizophrenie hat (Pedersen & Saltin, 2015). Auch auf der sozialen Ebene hat Sport eine integrierende und integrative Wirkung (Nagel et al., 2020).

In der Schweizer Bevölkerung lässt sich über die letzten Jahre zwar ein kontinuierlicher Anstieg der Sportaktivität[1] beobachten, dennoch geben 16 % der Schweizerinnen und Schweizer an, nie und 9 % unregelmässig bzw. selten Sport zu treiben (Lamprecht et al., 2020). Die europäischen Zahlen zeigen, dass 46 % der Bevölkerung sportlich inaktiv sind (European Commission, 2018) und auch global gibt es in einzelnen Subpopulationen sogar bis zu 80 % inaktive Personen, wobei die Inaktivitätsrate unter den einzelnen Ländern stark variiert (World Health Organization [WHO], 2018). Es gibt also noch viele Menschen, die sportlich inaktiv sind, und die somit die positiven Effekte des Sporttreibens auf ihre biopsychosoziale Gesundheit nicht ausnutzen oder nicht ausnutzen können.

Um die regelmässige Sportaktivität der Menschen zu fördern, möchte die Weltgesundheitsorganisation (2018) in den Bereichen Gesellschaft (u. a. Wissensvermittlung), Umwelt (u. a. Verbesserung von Bewegungsmöglichkeiten im öffentlichen Raum), System (u. a. politische Koordinationsarbeit) und Person (u. a. Verbesserung des Angebots zugeschnitten auf Zielgruppen) eingreifen. Für die vorliegende Arbeit ist die Ebene der Person entscheidend, wobei zusätzlich die Implementierung und Stärkung von Beratungen vorgeschlagen wird. Personen sollen individuell auf dem Weg zur Verhaltensänderung zu mehr sportlicher Aktivität unterstützt werden. Ebenso sehen verschiedene Gesundheitsinitiativen Beratungen für Sportaktivität als ein zentrales und effizientes Element in der Gesundheitsversorgung an (z. B. Berra et al., 2015; Fowles et al., 2018). Die standardisierte, individuelle Beratung wird somit als eine vielversprechende Massnahme zur Steigerung von Sportaktivität angesehen. Sie hat den Vorteil, dass die Bedürfnisse und die Charakteristiken einer Person berücksichtigt werden und in massgeschneiderte Empfehlungen einfliessen (Hawkins et al., 2008). Die Empfehlung wird dadurch für die zu beratende Person als persönlich relevant wahrgenommen und erhöht die Wahrscheinlichkeit, dass sie sich damit identifizieren kann (Noar et al., 2007).

[1] Im weiteren Verlauf der Dissertation liegt der Fokus auf der Sportaktivität, die sich gegenüber der Bewegungsaktivität abgrenzen lässt (Fuchs et al., 2015). Die Bewegungsaktivität wird als jene körperliche Aktivität mit erhöhtem Energieverbrauch bezeichnet, die benötigt wird, um (instrumentelle) Aufgaben im Alltag zu erledigen (z. B. Treppensteigen oder Gartenarbeit). Die Sportaktivität hingegen zeichnet sich durch körperliche Aktivitäten mit erhöhtem Energieumsatz aus, die um ihrer selbst willen (d. h. intrinsisch motiviert), aus personalen, sozialen oder gesundheitlichen Gründen ausgeübt wird. Das Konstrukt der körperlichen Aktivität umfasst übergreifend alle körperlichen Bewegungen, die mit dem Einsatz von grossen Muskelgruppen eine Erhöhung des Energieverbrauchs bewirken (Fuchs et al., 2015). Auch wenn sich die verwendete Literatur dieser Dissertation teilweise auf die körperliche Aktivität (u. a. das im Englisch verwendete *physical activity*; Strath et al., 2013) bezieht, wird in der vorliegenden Arbeit der Konsistenz wegen nur von der Sportaktivität gesprochen.

Für eine individuelle Sportberatung spricht zudem die Heterogenität der Menschen sowie die Vielfältigkeit des Sports und die damit verbundene Herausforderung, eine optimale Passung zwischen der Person und dem Sport herzustellen (Schmid, Sudeck et al., 2021; Sudeck & Conzelmann, 2011). Menschen und ihre Lebensläufe sind sehr unterschiedlich (z. B. Neyer & Asendorpf, 2018). Damit für eine Person eine passende Sportaktivität gefunden werden kann, müssen die unterschiedlichen psychischen und körperlich-motorischen Handlungsvoraussetzungen des Individuums beachtet werden (Schmid, Sudeck et al., 2021; Sudeck & Conzelmann, 2011). Bei den psychischen Handlungsvoraussetzungen sind vor allem die Beweggründe bzw. Präferenzen (Motive und Ziele), also warum eine Person Sport treibt, zentral (Lehnert et al., 2011; Schmid et al., 2018). Die körperlich-motorischen Handlungsvoraussetzungen beziehen sich auf sportliche Vorerfahrungen, motorische Fähigkeiten und Fertigkeiten sowie den Gesundheitsstatus (z. B. Vorerkrankungen) einer Person. Zusätzlich spielen die soziodemografischen Merkmale wie beispielsweise das Alter und das Geschlecht eine Rolle. Auf der anderen Seite ist der Sport an sich ebenfalls vielfältig. Er weist unterschiedliche Belastungsparameter (z. B. Intensität, Dauer) auf und kann verschieden inszeniert werden (z. B. Joggen allein im Wald oder in der Gruppe auf einer Tartanbahn). Sportaktivitäten haben somit unterschiedliche Anreize. Eine fehlende Passung zwischen der Person und dem Sport kann ein Grund für Inaktivität sein.

Die individuelle Sportberatung kann einen Beitrag leisten, um eine passende Sportaktivität zu finden und eine Bewegungsgewohnheit aufzubauen. Personen werden unterstützt, motiviert und befähigt, regelmässig und langfristig aktiv zu sein. Die vorliegende Dissertation greift das Thema der individuellen Sportberatung auf.

2 Sportberatungskonzepte

Das folgende Kapitel widmet sich zwei inhaltlichen Zugängen bei einer Beratung hinsichtlich Sportaktivität. Zudem zeigt es auf, welche Rolle das affektive Befinden bei der Aufrechterhaltung des Sportverhaltens hat. Unter dem Blickwinkel von bereits bestehenden Sportberatungskonzepten wird der neue Ansatz eingeordnet und dessen Mehrwert herausgearbeitet.

2.1 Unterschiedliche Zugänge bei der Beratung hinsichtlich Sportaktivität

Ekkekakis et al. (2016) unterscheiden zwischen dem *Hasen-* und *Schildkrötenansatz*, welche in den beiden folgenden Kapiteln beschrieben werden.

2.1.1 Hasenansatz

Das Ziel des Hasenansatzes ist, Gesundheitseffekte zu maximieren und das Risiko von beispielsweise Verletzungen zu minimieren (World Health Organization, 2010). Unter diesem Ansatz wird der Mensch auf einer körperlichen Ebene analysiert. Die maximale Effizienz von Gesundheitseffekten steht im Zentrum. In kurzer Zeit soll möglichst intensiv trainiert werden (z. B. mit einem hochintensiven Training). Dies, weil unter anderem die fehlende Zeit ein häufig genannter Grund ist, weshalb Personen keinen Sport treiben (z. B. Borodulin et al., 2016) und zusätzlich mit intensiven Trainingseinheiten Gesundheitseffekte erzielt werden können (z. B. Adamson et al., 2014). Es werden Sportaktivitäten empfohlen, die viele Kalorien verbrennen, zu einem gesunden Körpergewicht beitragen und Herzkreislauferkrankungen reduzieren. Deshalb sind in der Formulierung von Empfehlungen bei diesem Zugang die Dauer und Intensität einer Sportaktivität zentral. Dieser Ansatz wird Hasenansatz genannt, weil der Hase fähig ist, schnell zu laufen und das Gesundheitsziel somit schneller erreicht werden kann, als es eine Schildkröte (siehe Kapitel 2.1.2) kann.

Dieser Zugang ist kritisch zu beleuchten, weil sich ein hochintensives Training (z. B. Intervalltraining) meist nicht gut anfühlt und Personen aufgrund von beispielsweise Überbelastung wieder mit der

Sportaktivität aufhören (Ekkekakis et al., 2016; siehe auch Kapitel 2.2). Oder in den Worten von Biddle und Batterham (2015, S. 2): «Of course HIT [high intensity training] works, why wouldn't it? But it won't have any impact on public health[2] if no one does it». Folglich dürfte es bei der Mehrheit der Menschen wenig erfolgsversprechend sein, solche intensiven Trainings anzuwenden.

2.1.2 Schildkrötenansatz

Beim Schildkrötenansatz sollen Personen positive, affektive Bewegungserfahrungen sammeln. Das affektive (Wohl-)Befinden steht in enger Verbindung mit dem subjektiven Erleben und Empfinden von Emotionen (Sudeck & Thiel, 2020). Eine affektive Reaktion wird somit als eine Empfindung verstanden, das heisst, eine Sportaktivität wird als angenehm oder unangenehm empfunden oder die Person fühlt sich wohl oder unwohl während der Sportaktivität (Schlicht & Reicherz, 2012). Wie sich eine Aktivität anfühlt, ist ein wichtiger Aspekt, der vielfach übersehen oder vergessen wird (Ekkekakis et al., 2018). Bei diesem Ansatz steht die Freude an der Sportaktivität im Zentrum. Jede Person soll sanft mit einer Sportaktivität starten, die ihr gefällt und die sich gut anfühlt. Die Sportaktivität soll dann stetig in Frequenz und Dauer erhöht werden. Diese Herangehensweise wird zudem als wichtig angesehen, um das langfristige Durchführen sicher zu stellen. Es steckt die Annahme dahinter, dass wenn zu früh zu viel gemacht wird, sich Personen überfordert fühlen und eine Abneigung gegen die Sportaktivität entwickeln (siehe auch Kapitel 2.2). Ausserdem ist die Bereitschaft für eine intensive Sportaktivität generell geringer als für eine moderate, weshalb für den (Wieder-)Einstieg lediglich moderate Sportaktivitäten empfohlen werden sollten (Ekkekakis et al., 2016).

Dieser Ansatz wird mit der Schildkröte gleichgesetzt, weil sich im Gegensatz zum Hasen das ausdauernde, stetige Tempo der Schildkröte als zuverlässiger und auch effektiver erweist, um langfristig eine Bewegungsgewohnheit aufzubauen und diese auch aufrechtzuerhalten (Ekkekakis et al., 2016). Die Tier-Metaphern sind diesem Kontext für die Geschwindigkeit der Zielerreichung zu verstehen. Es lässt aber dennoch daraus schliessen, dass der Schildkrötenansatz für spezifische Zielgruppen wie übergewichtige Personen, aber auch inaktive oder unregelmässig aktive Personen und (Wieder-)Einsteiger und (Wieder-)Einsteigerinnen geeigneter zu sein scheint.

2.2 Das affektive Befinden während der Sportaktivität als wichtiger Bestandteil bei der Aufrechterhaltung

In der Regel entscheidet sich – im Sinne der hedonistischen Theorie – eine Person, eine Sportaktivität auszuführen, die ihr ein gutes Gefühl gibt, und neigt dazu, diejenige zu vermeiden, die sich schlechter anfühlt (Ekkekakis et al., 2016; Ekkekakis & Backhouse, 2014). Das Kreismodell in Abbildung 1a (Ekkekakis et al., 2016) erklärt anhand verschiedener Phasen den Einfluss des affektiven Befindens auf die Aufrechterhaltung einer Sportaktivität einer Person.

Hat eine Person ein schlechtes Befinden während einer Sportaktivität oder negative Sporterfahrungen gemacht, beispielsweise wurde sie von der Sportaktivität kognitiv überfordert oder sie war sehr anstrengend, fühlt sich diese Person nicht gut. Diese negativen Erfahrungen führen zu einer geringen intrinsischen Motivation, die Sportaktivität noch einmal aufzunehmen. Die Vermeidung der Sportaktivität führt zu einer Zunahme des sitzenden Verhaltens sowie einer Abnahme der Fitness. Häufig nimmt auch das Körpergewicht zu. Es entstehen Barrieren (z. B. Scham aufgrund Gewichtszunahme), die wiederum

[2] *Public health* ist in diesem Zusammenhang als «öffentliche Gesundheit mit dem Ziel einer Verlängerung der Lebenszeit und Steigerung der Lebensqualität in der Bevölkerung» zu verstehen (Fuchs, 2003, S. 38).

vom Sporttreiben abhalten. Erneute Versuche, sportlich aktiv zu sein, führen (z. B. aufgrund des Übergewichts) zu (noch) negativeren Erfahrungen, was wiederum zu weniger Sportaktivität führt. Es entwickelt sich eine Art Teufelskreis des Vermeidens.

Daraus lässt sich schliessen, dass wenn sich eine Person während der Sportaktivität gut fühlt und Freude erlebt, sie eher dazu neigt, regelmässiger sportlich aktiv zu sein (Klos et al., 2020). Folglich ist der Fokus auf positive affektive Bewegungserfahrungen während der Sportaktivität ein Ansatz, der weiterverfolgt werden sollte. Es zeigt sich, dass durch eine gelungene Passung zwischen den sportbezogenen Motiven und Zielen sowie der Sportaktivität, sich das affektive Befinden während der Sportaktivität verbessert und dies wiederum das regelmässige und langfristige Ausüben einer Sportaktivität begünstigt (Klusmann et al., 2016; Schmid, Gut et al., 2021; Sudeck & Conzelmann, 2011).

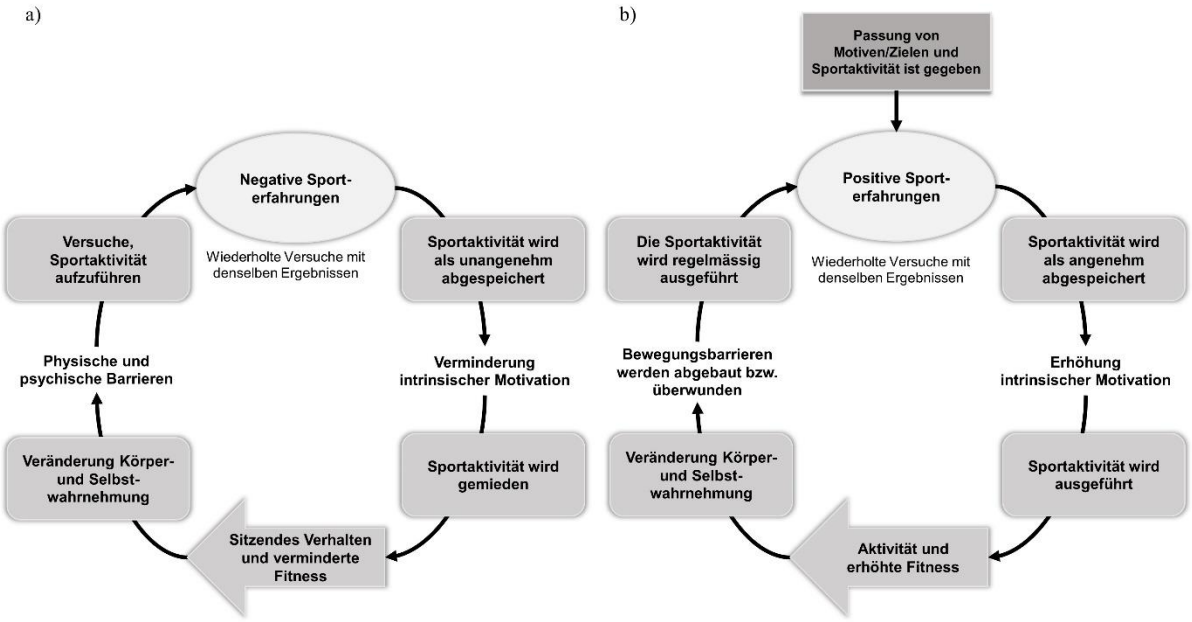

Abbildung 1. Kreismodell vom Einfluss des affektiven Befindens auf die Aufrechterhaltung der Sportaktivität (erweitert und modifiziert nach Ekkekakis et al., 2016, S. 17).

Es ist somit anzunehmen, dass bei einer Passung zwischen Sportaktivität und Person die Sportaktivität als positiv wahrgenommen und auch so abgespeichert wird (Abbildung 1b). Die intrinsische Motivation, sportlich aktiv zu sein, wird dadurch gesteigert. Somit wird auch die Sportaktivität eher ausgeübt, was zu vermehrter Aktivität und einer erhöhten Fitness führt. Bewegungsbarrieren werden eher überwunden und die Sportaktivität wird regelmässiger ausgeführt. Das affektive Befinden ist demnach für die langfristige Aufrechterhaltung einer Sportaktivität ein Schlüsselfaktor (Rhodes & Kates, 2015) und kann zusätzlich von der Passung positiv beeinflusst werden.

2.3 Bestehende individuelle Sportberatungskonzepte und wo sie zu kurz greifen

Es liegen bereits eine Reihe von individuellen Sportberatungskonzepten vor (siehe Anhang C: Supplement 1 von Beitrag 3). Diese Konzepte orientieren sich an den Verhaltensänderungstechniken (u. a. Handlungs- und Bewältigungsplanung; Michie et al., 2013), welche sich als effektiv erwiesen haben, um das Sportverhalten zu fördern (Bélanger-Gravel et al., 2013). In verschiedenen Interventionsmaterialien (z. B. American College of Sports Medicine, 2018; Office of Disease Prevention and Health Promotion, 2008) wird zusätzlich darauf hingewiesen, dass Personen eine Sportaktivität wählen sollen, die

ihnen gefällt. Ebenso weist die WHO (2018) darauf hin, dass Angebote geschaffen werden sollen, die auf den Bedürfnissen und Vorlieben von Personen basieren.

Dennoch werden die individuellen Präferenzen in existierenden individuellen Sportberatungskonzepten wenig oder gar nicht thematisiert (siehe Anhang C: Supplement 1 von Beitrag 3). Vier Konzepte, bei denen die Präferenzen erwähnt werden, sind nachfolgend vorgestellt. Im Konzept von Fortier et al. (2011) beispielsweise werden die Personen im Gespräch nach ihren Präferenzen von Sportaktivitäten (z. B. draussen oder drinnen, alleine oder in einer Gruppe, intensiv oder wenig intensiv; Fortier et al., 2020) gefragt. Zudem wird den Teilnehmenden eine Liste mit Sportaktivitäten vorgelegt, bei denen sie angeben sollen, welche sie davon schon einmal ausprobiert haben und welche ihnen gefiel. Bei Fuchs et al. (2011) müssen die Teilnehmenden auf einem Arbeitsblatt vermerken, ob die geplante Sportaktivität ihren Interessen entspricht. Chemtob et al. (2019) haben die Beweggründe für das Sporttreiben (z. B. Verbesserung der Fitness oder Teilnahme an Gruppenaktivitäten) als Bestandteile im Beratungsgespräch aufgeführt. Kolt et al. (2007) geben an, dass sie in ihrer Intervention das Identifizieren von Motivatoren für sportliche Aktivität als Strategie anwenden. Bei allen oben aufgeführten Konzepten besteht jedoch Unklarheit darüber, wie die Präferenzen in die Empfehlung einfliessen. Es wird zudem keine systematische Erfassung der Präferenzen (z. B. mit validem Fragebogen) gemacht und auch eine ausgiebige Diskussion oder Reflexion darüber findet nicht statt. Diese Lücke gilt es zu schliessen.

Dabei ergibt sich zusätzlich das Problem, dass inaktive, wenig aktive und unregelmässig sportlich aktive Personen ihre Präferenzen im Sport nicht kennen. Sie haben in ihrem Lebenslauf höchstwahrscheinlich wenige (oder keine) positiv konnotierten Sporterfahrungen (z. B. im Schulsport) machen können. Somit sind auch ihre Sportvorerfahrungen gering. Sie können nicht einschätzen, was sie im Sport suchen und sind sich demnach ihrer sportbezogenen Motive und Ziele nicht bewusst. Zudem kennen diese Personen oftmals die Vielfalt des Sports nicht und wissen zum Beispiel nicht, dass Sportaktivitäten unterschiedlich inszeniert werden können. Ausserdem orientieren sich diese Personen eher an Zweckanreizen, wobei der Anreiz (für das Sporttreiben) im Ergebnis bzw. im Zweck des Handelns liegt (Lehnert et al., 2011; Schüler, 2020). Es wird Sport getrieben, um beispielsweise die Gesundheit zu steigern oder schlank zu werden. Gerade das Gesundheitsmotiv ist zwar ein gutes Einstiegsmotiv, für eine regelmässige Sportteilnahme ist dieses Motiv aber nicht ausreichend (Lehnert et al., 2011). Für die Aufrechterhaltung der Sportteilnahme werden Tätigkeitsanreize benötigt, wobei der Anreiz in der Tätigkeit selbst liegt (Lehnert et al., 2011; Schüler, 2020). Es wird Sport getrieben, weil sie beispielsweise Freude an gelingenden sportlichen Bewegungen haben. Dabei ist die Person intrinsisch motiviert. Sie führt die Tätigkeit (hier das Sporttreiben) aus, um ihrer selbst willen (Seelig & Fuchs, 2006). Die Tätigkeitsanreize sind somit mit der intrinsischen Motivation verbunden (Rheinberg, 2010). Für das langfristige Dranbleiben an der Sportaktivität ist die intrinsische und identifizierte Motivation entscheidend (z. B. Teixeira et al., 2012). Weil dieses Wissen über die Tätigkeitsanreize und die intrinsische Motivation fehlt, orientieren sich inaktive, wenig aktive und unregelmässig sportlich aktive Personen folglich an Zweckanreizen.

In einer Sportberatung würde es demnach Sinn machen, a) den Personen aufzuzeigen, welche Präferenzen (hier Motive und Ziele) sie im Sport haben. Zudem sollten sie b) unterschiedliche Anreize von Sportaktivitäten kennen lernen (z. B. durch Erleben von diversen Sportaktivitäten) und diese auch hinsichtlich der affektiven Wirkung beurteilen können. Mit diesem Wissen wäre es folglich möglich, c) selbst eine passende Sportaktivität auszuwählen. Die motivationale Kompetenz ist das einzige Konstrukt, das diese drei Aspekte berücksichtigt. Rheinberg (2010, S. 385) definiert sie als «die Fähigkeit, aktuelle und künftige Situationen so mit den eigenen Tätigkeitsvorlieben in Einklang zu bringen, dass effizientes Handeln auch ohne ständige Willensanstrengung möglich wird». Folglich hat eine Person im

Sport eine hohe motivationale Kompetenz, wenn sie a) ihre sportbezogenen Motive und Ziele kennt, b) unterschiedliche Sportaktivitäten hinsichtlich ihrer Anreize beurteilen kann und somit auch abschätzen kann, was sie darin erwartet und so c) eine für sie passende Sportaktivität auswählen oder diese entsprechend inszenieren kann.

Die individuellen Präferenzen und die motivationale Kompetenz scheinen zwei Aspekte zu sein, die bei der Konzeption eines neuen Beratungsansatzes berücksichtigt werden sollten. Aus diesen Überlegungen entstand das dieser Dissertation zugrundeliegende Forschungsprojekt, in welchem ein neuer Beratungsansatz mit besonderem Fokus auf die individuellen Präferenzen konzipiert und im Feld umgesetzt wurde – im Sinne des Theorie-Praxis-Transfers.

3 Einordnung der Dissertation in das Forschungsprojekt «Entwicklung und Evaluation einer individuellen Sportberatung basierend auf Motiven und Zielen – der COMET-Ansatz»

Die vorliegende Dissertation ist im Rahmen des Forschungsprojekts «Entwicklung und Evaluation einer individuellen Sportberatung basierend auf Motiven und Zielen – der COMET-Ansatz»[3] entstanden. Dieses Projekt wurde unter der Leitung von Dr. Julia Schmid und Prof. Dr. Achim Conzelmann am Institut für Sportwissenschaft der Universität Bern durchgeführt. Das Ziel war es, eine individuelle Sportberatung zu konzipieren und diese im Feld umzusetzen.

Aufbauend auf den Erkenntnissen des Forschungsprojekts «Welcher Sport für wen?» (Sudeck & Conzelmann, 2010) stellt eine individuelle Sportberatung, neben der Anpassung und Erweiterung bestehender Sportangebote (z. B. durch Inszenierung) und massgeschneiderten Sportangeboten eine dritte Möglichkeit dar, optimale Passungsverhältnisse zwischen einer Person und dem Sport herzustellen (Schmid, Sudeck et al., 2021). Wie in Kapitel 2.2 erwähnt, führt eine optimale Passung zwischen Person und Sport zu einem positiven affektiven Befinden während des Sports, was sich wiederum positiv auf das regelmässige Sporttreiben auswirken kann (Klusmann et al., 2016; Schmid, Gut et al., 2021; Sudeck & Conzelmann, 2011).

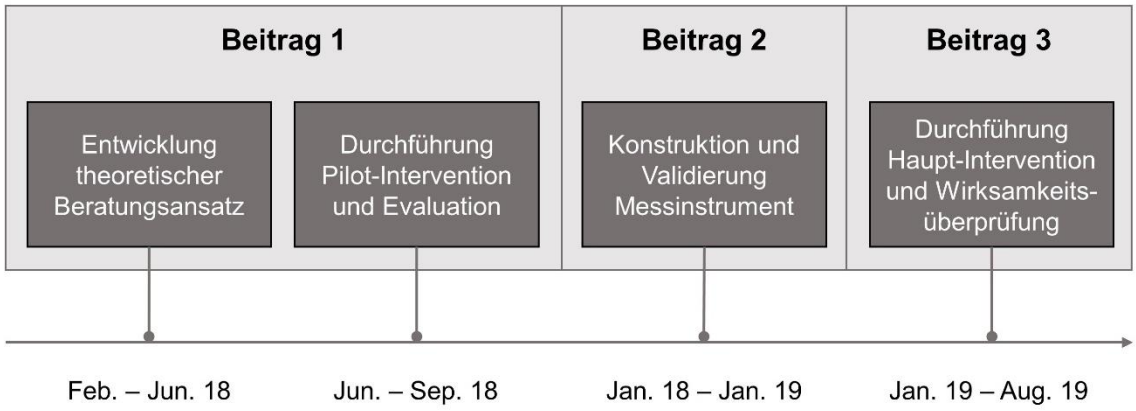

Abbildung 2. Phasen des Forschungsprojekts «Entwicklung und Evaluation einer individuellen Sportberatung basierend auf Motiven und Zielen – der COMET Ansatz» mit den dazugehörigen wissenschaftlichen Beiträgen

[3] Das Projekt dauerte von Januar 2018 bis Dezember 2019 und wurde finanziell von der Gesundheitsversicherung Atupri unterstützt.

Die Abbildung 2 zeigt die verschiedenen Phasen des Forschungsprojekts mit den jeweiligen wissenschaftlichen Beiträgen, die innerhalb dieses Forschungsprojektes entstanden sind. Alle drei Beiträge bauen aufeinander auf. In einem ersten Schritt wurde die individuelle Sportberatung als theoriebasierter Ansatz konzipiert und anschliessend dessen Akzeptanz sowie die Implementationsgenauigkeit mit einer Pilot-Intervention evaluiert (Beitrag 1). In einem zweiten Schritt wurde ein Messinstrument für die motivationale Kompetenz entwickelt und validiert (Beitrag 2). Abschliessend wurde in einem dritten Schritt die Wirksamkeit der individuellen Sportberatung in einer randomisiert kontrollierten Feldstudie überprüft (Beitrag 3). In den nächsten Kapiteln werden die drei bei der kumulativen Dissertation zugehörigen Beiträge beschrieben.

3.1 Die individuelle Sportberatung konzipieren und evaluieren (Beitrag 1)

Schmid, J., Schorno, N., Gut, V., Sudeck, G., & Conzelmann, A. (2020). "What type of activity suits me?" Development and implementation of the exercise and sport counselling approach COMET. *Zeitschrift für Sportpsychologie, 27*(4), 127–138. https://10.1026/1612-5010/a000309

Der erste Beitrag stellt einen neuen theoriebasierten Ansatz einer individuellen Sportberatung vor und evaluiert deren Umsetzbarkeit. Der neu konzipierte Beratungsansatz nennt sich COMET[4].

Der COMET-Ansatz hat zum Ziel, gemeinsam mit einer Beraterin oder einem Berater eine auf die sportbezogenen Motive und Ziele passende Sportaktivität zu finden, die im Alltag umgesetzt werden kann. Der Ansatz basiert auf zwei theoretischen Aspekten: der Herstellung einer Passung zwischen der Person und der Umwelt (hier dem Sport; Sudeck & Conzelmann, 2011; van Vianen, 2018) und der motivierenden Gesprächsführung (Miller & Rollnick, 2015). Hinsichtlich der Passung steckt die in Kapitel 2.2 beschriebene Annahme dahinter, dass wenn die Sportaktivität auf die Motive und Ziele der Person passt, das subjektive affektive Befinden während der Sportaktivität gut ist, was wiederum zu einer Aufrechterhaltung der Sportaktivität führt (Klusmann et al., 2016; Schmid, Gut et al., 2021; Sudeck & Conzelmann, 2011). Die sportbezogenen Motive und Ziele werden in der Beratung systematisch erfasst (mit dem Berner Motiv- und Zielinventar; Lehnert et al., 2011; Schmid et al., 2018) und umfassend berücksichtigt. Bei der motivierenden Gesprächsführung handelt es sich um einen partnerschaftlichen Gesprächsstil über Veränderungen (Miller & Rollnick, 2015), wobei offene Fragen, aktives Zuhören und der Handlungs- und Bewältigungsplan zum Einsatz kommen (Hardcastle et al., 2017).

Die konzipierte Sportberatung besteht aus sechs verschiedenen Beratungselementen, welche sich am 5A-Konzept (*a*ssess/Diagnostik, *a*dvice/Abgabe einer Empfehlung, *a*gree/gemeinsame Vereinbarung von Zielen, *a*ssist/weiterführende Unterstützung, *a*rrange/nachhaltige Betreuung; Whitlock et al., 2002) orientieren. So werden zu Beginn die Motive und Ziele sowie das aktuelle Sportverhalten von den Personen erfasst (Beratungselement 1). Aufgrund dessen wird eine Rückmeldung zum Motiv- und Zielprofil und dem dazugehörigen Sporttypen generiert und im ersten Gespräch von einer Beraterin oder einem Berater rückgemeldet sowie erklärt (Beratungselement 2). Zusätzlich wird ein Interview zum Sport im Lebenslauf durchgeführt. Danach erleben die Teilnehmenden drei unterschiedliche Schnuppersportangebote, deren Inhalte sich an den sportbezogenen Motiven und Zielen (Lehnert et al., 2011; Schmid et al., 2018) orientieren (Beratungselement 3). Vor, während und nach den Schnuppersportangeboten beantworten die Teilnehmenden diverse Fragen (z. B. zur Freude, zum affektiven Zustand, zur Anstrengung) mit einer Smartphone-Applikation. Beratungselement 1 bis 3 sind im Bereich *a*ssess anzusiedeln.

[4] Das Akronym COMET setzt sich aus den englischen Wörtern ***CO****unseling based on* ***M****otives and goals in* ***E****xercise and spor****T*** zusammen.

Über die gesammelten Erfahrungen und Daten in den Schnuppersportangeboten wird in einem zweiten Gespräch strukturiert reflektiert und diskutiert. Gemeinsam werden zudem passende Sportaktivitäten gesucht (Beratungselement 4; *a*dvice/*a*ssist). Zudem wird ein Handlungsplan erstellt, der festhält, welche Sportaktivität, wann und wo und ggf. mit wem durchgeführt wird (Beratungselement 5; *a*gree). Als Nachkontakt wird telefonisch über die Umsetzung des Handlungsplans im Alltag diskutiert und wenn nötig werden Anpassungen vorgenommen. Ausserdem werden Barrieren identifiziert, die die Teilnehmenden hindern, die Sportaktivität im Alltag umzusetzen, und dazu Strategien erarbeitet, um diese zu überwinden (Beratungselement 6; *a*rrange).

Mithilfe einer Evaluation wurde geprüft, wie die Sportberatung von den Teilnehmenden wahrgenommen wurde, das heisst, wie zufrieden sie damit waren und wie nützlich sie einzelne Elemente einstuften (Peters et al., 2014). Zur Zufriedenheit wurden 93 Teilnehmende schriftlich befragt. Bezüglich Nützlichkeit wurde mit sieben Personen ein halbstandardisiertes Telefoninterview durchgeführt. Zudem wurde überprüft, wie genau die Sportberatung von den Beraterinnen und Beratern umgesetzt werden konnte (Wiedergabetreue) und welche Aspekte die Implementation beeinflusst haben. Um die Wiedergabetreue des Gesprächsprotokolls zu überprüfen, haben die 16 Beraterinnen und Berater direkt nach jedem Beratungsgespräch schriftlich einen Fragebogen ausgefüllt.

Die Auswertung der Evaluation zeigt, dass die Teilnehmenden insgesamt mit der Beratung zufrieden waren. Insbesondere die Schnuppersportangebote wurden als hilfreich angesehen, weil sie dort vielfältige Erfahrungen sammeln und diese gemeinsam mit der beratenden Person reflektieren konnten. Die Teilnehmenden haben ausserdem hervorgehoben, dass sie durch das Gespräch mit der Beraterin oder dem Berater ihre Präferenzen besser erkennen konnten. Hinsichtlich der Wiedergabetreue ergaben die Auswertungen, dass die Beraterinnen und Berater das Gesprächsprotokoll wie vorgegeben umsetzten. Sie sind lediglich abgewichen, wenn die Teilnehmenden Fragen zu anderen Inhalten stellten oder die Daten der Smartphone-Befragung widersprüchlich waren.

Die vorliegende Studie zeigt zusammenfassend, dass der COMET-Ansatz von einer nicht-klinischen Stichprobe akzeptiert wird und auch getreu umgesetzt werden kann. Dies spricht dafür, den COMET-Ansatz mit einer grösseren Anzahl Teilnehmenden umzusetzen.

3.2 Die motivationale Kompetenz messbar machen (Beitrag 2)

Schorno, N., Sudeck, G., Gut, V., Conzelmann, A., & Schmid, J. (2021). Choosing an activity that suits: development and validation of a questionnaire on motivational competence in exercise and sport. *German Journal of Exercise and Sport Research, 51*(1), 71–78. https://10.1007/s12662-020-00698-z

Der zweite Beitrag hatte zum Ziel, ein reliables und valides Messinstrument für die motivationale Kompetenz zu entwickeln. Die im Beitrag 1 (Kapitel 3.1) beschriebene individuelle Sportberatung zielt unter anderem auf die Förderung der motivationalen Kompetenz ab, wobei es für dieses Konstrukt noch kein Messinstrument gab. Die motivationale Kompetenz kann als die motivationale Seite der bewegungsspezifischen Selbstregulationskompetenz (Sudeck & Pfeifer, 2016) angesehen werden, während die bewegungsspezifische Selbstkontrolle die volitionale Seite (u. a. Umsetzungsplanung) abdeckt.

Im ersten Schritt der Skalenkonstruktion wurde nach passenden Aussagen gesucht, welche die motivationale Kompetenz abbilden. Dazu haben vier Sportwissenschaftlerinnen und Sportwissenschaftler sowie eine Psychologin aufgrund der Theorie (Rheinberg, 2010; Rheinberg & Engeser, 2010; Rheinberg & Vollmeyer, 2018) zwölf Items entwickelt. Anschliessend wurde mit fünf qualitativen Interviews – im Sinne einer kommunikativen Validierung – die Verständlichkeit der einzelnen Items mit der Methode

des lauten Denkens (Presser et al., 2004) überprüft. Zudem wurde die faktorielle Validität mittels explorativer Strukturgleichungsmodellierung (Asparouhov & Muthén, 2009) kontrolliert sowie eine Kreuzvalidierung durchgeführt. Zudem wurde die Messinvarianz mit zwei zufälligen Hälften der gesamten Stichprobe überprüft. Um die Reliabilität der Skala zu prüfen, wurde die Faktor-, Indikator- und Retest-Reliabilität berechnet. Um die Validität der Skala zu prüfen, wurde auf latenter Ebene die Konstruktvalidität mit der Selbstkonkordanz (Seelig & Fuchs, 2006) sowie die Kriteriumsvalidität mit der sportspezifischen Selbstkontrolle (Sudeck & Pfeifer, 2016) und dem Sportvolumen berechnet.

Die Analysen wurden mit einer Stichprobe von 645 Personen durchgeführt. Davon hatte eine Teilstichprobe (76 Personen) den Fragebogen zwei Mal mit einem Abstand von zwei Wochen ausgefüllt, dies zur Bestimmung der Retest-Reliabilität.

Letztendlich wurde aus statistischen und theoretischen Gründen eine eindimensionale Lösung mit vier Items gewählt, wobei alle vier Items gute Faktorladungen aufwiesen. Die vier finalen Items decken die Komponenten von Rheinberg und Vollmeyer (2018) (siehe Kapitel 2.3) mit mindestens einem Item ab. Die Messinvarianz liess sich mit beiden Hälften der Stichprobe nachweisen. Die Ergebnisse der Validität zeigten erwartungsgemäss, dass die motivationale Kompetenz mit dem intrinsischen und identifizierten Motivationsmodus der Selbstkonkordanz positiv zusammenhängt. Zusätzlich liess sich zeigen, dass die motivationale Kompetenz und die sportspezifische Selbstkontrolle positiv mit dem Sportvolumen assoziiert sind, was für die Kriteriumsvalidität spricht. Alle Komponenten der Reliabilität zeigten ebenfalls zufriedenstellende Resultate.

Mit der neu entwickelten Skala liegt ein reliables, valides und auch ökonomisches Messinstrument zur motivationalen Kompetenz vor, das in der Praxis eingesetzt werden kann. Es bietet die Grundlage zur Erfassung der motivationalen Kompetenz und misst, ob a) eine Person ihre Motive und Ziele kennt, b) sie Sportaktivitäten hinsichtlich deren Anreize lesen und beurteilen kann und c) eine für sie passende Sportaktivität auswählen kann.

3.3 Die Wirksamkeit der individuellen Sportberatung überprüfen (Beitrag 3)

Schorno, N., Gut, V., Conzelmann, A., & Schmid, J. (2021). Effectiveness of individual exercise and sport counseling based on motives and goals: the COMET approach [Manuscript submitted for publication]. Institute of Sport Science, University of Bern.

Im dritten Beitrag wurde der Frage nachgegangen, wie wirksam der COMET-Ansatz auf die motivationale Kompetenz (Rheinberg & Engeser, 2010; Rheinberg & Vollmeyer, 2018; Schorno et al., 2021), die sportspezifische Selbstkontrolle (Sudeck & Pfeifer, 2016), die Selbstkonkordanz (v. a. intrinsischer und identifizierter Motivationsmodus; Seelig & Fuchs, 2006) und das Sportvolumen (Bélanger-Gravel et al., 2013; Fuchs et al., 2016; Rheinberg & Engeser, 2010) ist.

Die nicht-klinische Feldstudie wurde mit 129 Personen mit einem stratifizierten-randomisierten-kontrollierten Design durchgeführt und dauerte insgesamt 14 Wochen. Die Stichprobe bestand aus 63 % inaktiven Personen. Die Interventionsgruppe nahm an einem Beratungsevent (Beratungselement 1-5; siehe Kapitel 3.1) teil und bekam vier Wochen später ein Telefonanruf als sogenannter «Booster» (Beratungselement 6; siehe Kapitel 3.1). Der Kontrollgruppe wurde zum Zeitpunkt des Beratungsevents eine schriftliche Information per E-Mail zugesendet und bekam vier Wochen danach einen organisatorischen Telefonanruf. Bei der Kontrollgruppe handelt es sich um eine minimale Intervention.

Die Ergebnisse zeigen, dass die individuelle Sportberatung erwartungskonform die motivationale Kompetenz, die sportspezifische Selbstkontrolle sowie das Sportvolumen fördern konnte. Auf die Selbstkonkordanz hingegen hatte die Beratung keinen Einfluss genommen. Es ist zu vermuten, dass das Zusammenspiel aus a) nur zwei Kontakten (Beratungsevent und Telefon-Booster), b) den (relativ) stabilen Motivationsmodi über die Zeit (Emm-Collison et al., 2020) sowie c) einem noch unklaren Veränderungszeitraum der Motivationsmodi (Wasserkampf & Kleinert, 2016) zu keiner Veränderung der Selbstkonkordanz geführt hat.

Neben der Wirksamkeitsüberprüfung zeigt dieser Beitrag ebenfalls, wie sich der COMET-Ansatz von anderen bestehenden Sportberatungskonzepten abhebt. Im COMET-Ansatz werden zum einen die sportbezogenen Motive und Ziele (Präferenzen) mit dem Berner Motiv- und Zielinventar (BMZI; Lehnert et al., 2011; Schmid et al., 2018) systematisch erfasst. Zum anderen nehmen die Teilnehmenden vor Ort an verschiedenen Sportaktivitäten teil und können dadurch ihre Präferenzen und auch Abneigungen direkt erleben. Im anschliessenden Beratungsgespräch wird über die gemachten Erfahrungen reflektiert und basierend darauf sowie den Angaben im BMZI gemeinsam nach passenden Sportaktivitäten gesucht. Das Erleben und die anschliessende Diskussion und Reflexion darüber (Schön, 1983) helfen, den eigenen Präferenzen bewusst zu werden. Dass die individuellen Präferenzen der Personen umfassend im Fokus stehen, wird als klarer Mehrwert des COMET-Ansatzes gegenüber anderen Sportberatungskonzepten (siehe auch Anhang C: Supplement 1 von Beitrag 3) gesehen.

4 Diskussion und Ausblick

Abschliessend werden die Erkenntnisse der drei Beiträge zusammengefasst und mit Hinblick auf das Ziel der Dissertation eingeordnet. Zusätzlich werden Diskussionspunkte herausgeschält und Forschungsausblicke gewährt.

4.1 Zusammenfassung der Befunde

Es gibt nach wie vor viele inaktive, wenig und unregelmässig sportlich aktive Personen (z. B. European Commission, 2018; Lamprecht et al., 2020). Ein möglicher Grund für die Inaktivität kann die fehlende Passung zwischen der Person und dem Sport sein. Hierbei könnte eine individuelle Sportberatung Unterstützung bieten, weil eine für die Person passende Sportaktivität gefunden (Schmid, Sudeck et al., 2021) und damit das Aufrechterhalten der Sportaktivität begünstigt wird. Aufbauend auf den Erkenntnissen des Forschungsprojekts «Welcher Sport für wen?» (Sudeck & Conzelmann, 2010) war das Ziel der vorliegenden Dissertation, einen theoriebasierten Ansatz für eine individuelle Sportberatung zu konzipieren, umzusetzen, zu evaluieren und dessen Wirksamkeit zu überprüfen. Die drei Beiträge dieser Dissertation decken diese verschiedenen Phasen von der Konzeptidee bis zur Umsetzung ab. Im ersten Beitrag wurde der neu konzipierte COMET-Ansatz vorgestellt und dessen Umsetzung evaluiert. Die Befunde zeigen, dass der COMET-Ansatz bei einer nicht-klinischen Stichprobe wie vorgesehen umgesetzt werden kann. Die Teilnehmenden sind mit der Sportberatung zufrieden und erachten sie als nützlich. Die Evaluation des COMET-Ansatzes ist folglich geglückt. Im COMET-Ansatz ist unter anderem die motivationale Kompetenz (Rheinberg, 2010; Rheinberg & Vollmeyer, 2018) von zentraler Bedeutung. Allerdings liegt für dieses Konstrukt noch kein Messinstrument vor, deswegen wurde im zweiten Beitrag eine Skala entwickelt, die zur Messung der motivationalen Kompetenz eingesetzt werden kann. Die eindimensionale Skala erwies sich als reliabel, valide und ökonomisch. Auf diesen beiden Beiträgen aufbauend wurde im dritten Beitrag die Wirksamkeit des COMET-Ansatzes hinsichtlich psychologischer Variablen (u. a. motivationale Kompetenz) und dem Sportvolumen überprüft. Die neu entwickelte Skala konnte bei der Wirksamkeitsüberprüfung sogleich eingesetzt werden. Die Befunde zeigen, dass der COMET-Ansatz einen positiven Effekt auf die motivationale Kompetenz, die bewegungsspezifische

Selbstkontrolle sowie das Sportvolumen hat. Im Hinblick auf das Ziel der Dissertation lässt sich zusammenfassen, dass der COMET-Ansatz zielführend konzipiert, wie geplant umgesetzt und positiv evaluiert werden konnte (Beitrag 1). Die motivationale Kompetenz kann mit der neu entwickelten Skala reliabel und valide erfasst werden (Beitrag 2). Zudem wurde mit der Wirksamkeitsüberprüfung ein positiver Einfluss auf motivationale und volitionale Konstrukte sowie das Sportverhalten von gesunden Personen aufgezeigt (Beitrag 3). Der theoriebasierte COMET-Ansatz hat sich somit in der Praxis bewährt.

4.2 Der COMET-Ansatz

4.2.1 Praxisrelevanz

Zuerst ist anzumerken, dass sich die vorliegende Dissertation mit einem praxisrelevanten Thema auseinandersetzt, da eine individuelle Sportberatung einen Beitrag zu vermehrter und langfristiger Sportaktivität von einzelnen Personen leistet. Vermehrte Sportaktivität in der Bevölkerung ist ein Ziel auf nationaler (Bundesamt für Sport, 2013) sowie auch internationaler Ebene (World Health Organization, 2020). Die Dissertation leistet damit auch einen Anteil zum geforderten Theorie-Praxis-Transfer (z. B. Wolf et al., 2020), denn der evidenzbasierte COMET-Ansatz kann in der Praxis umgesetzt werden. Dies ist als eine Stärke zu bewerten.

Damit der COMET-Ansatz anschlussfähig an andere Interventionen ist, orientierte er sich am 5-A-Konzept (Whitlock et al., 2002). Mit dem 5-A-Konzept haben Whitlock et al. (2002) ein Rahmenkonzept entwickelt, das eine Systematisierung bei Interventionen von Lebensstiländerungen möglich macht. Zudem kann eine systematische Analyse von Interventionsprogrammen vorgenommen werden (Sudeck, 2007). Das ursprünglich für die Tabakentwöhnung entwickelte Rahmenkonzept wird auch in anderen Bereichen wie beispielsweise der Übergewichtsberatung (z. B. Jay et al., 2010) eingesetzt.

Mit dem COMET-Ansatz wurde eine individuelle Sportberatung entwickelt, die sich auch im klinisch/therapeutischen und kommerziellen Bereich integrieren lässt. Der Aufbau des COMET-Ansatzes in einzelnen Elementen bringt den Vorteil, Anpassungen an die bestehenden Ressourcen oder Zielgruppen vorzunehmen. Zudem können einzelne Elemente ausgelagert (z. B. Bewegungserfahrungen in alltäglichen Sportangeboten sammeln), ergänzt (z. B. Wissensvermittlung in Workshops) oder weggelassen (z. B. keine Smartphone-Befragung) werden. Ob die Beratung trotz solchen Anpassungen gleichwohl wirksam ist oder welche Auswirkungen diese Veränderungen auf die Resultate hätten, müsste weiterführend untersucht werden.

Im klinischen Bereich liesse sich der COMET-Ansatz in der Rehabilitation einsetzen. Ein wichtiges Ziel der Rehabilitation ist es, körperliche Aktivität in den Alltag von Patientinnen und Patienten zu integrieren (Geidl et al., 2012). Als konkretes Beispiel könnte der COMET-Ansatz in der Nachsorge bei Personen mit bariatrischen (gewichtsreduzierenden) Operationen angewendet werden. Die Sportaktivität wird nach dieser Operation als ein zentrales Element zum Halten des Gewichts und zur Steigerung der Fitness angesehen (Bellicha et al., 2018; Hansen et al., 2020). Dennoch besteht die aktuelle Nachsorge der Patientinnen und Patienten meist lediglich aus medizinischer, psychologischer und ernährungswissenschaftlicher Unterstützung. Wie Patientinnen und Patienten eine Sportaktivität dauerhaft in ihren Alltag integrieren können, wird noch zu wenig thematisiert. Hier könnte der COMET-Ansatz im Zusammenspiel mit den drei Kompetenzen der bewegungsbezogenen Gesundheitskompetenz (Steuerungs-, Bewegungs- und Selbstregulationskompetenz; Sudeck & Pfeifer, 2016) seinen Beitrag leisten. Die drei Kompetenzen decken Fähigkeiten, Motivation und Bereitschaft ab, welche für langfristiges Sporttreiben gebraucht werden. In der Gruppe würden die Patientinnen und Patienten ein mehrwöchiges Bewegungsprogramm durchlaufen, das ähnlich wie im Schulsport aufgebaut ist und Lernaufgaben beinhaltet (siehe

dazu Haible et al., 2019). Zusätzlich könnten zur Wissensvermittlung kleinere Gruppen-Workshops stattfinden, wobei Inhalte wie Trainingswirksamkeit sowie Bewältigungs- und Handlungsplanung gemeinsam besprochen würden. Am Ende des Bewegungsprogramms würden die Patientinnen und Patienten unterschiedliche Sportaktivitäten kennenlernen, wie diese in Alltagsangeboten anzutreffen sind (z. B. Wasseraktivitäten, spielerische Aktivitäten, entspannungsorientierte und tänzerische Aktivitäten etc.). Im Anschluss würden individuelle Sportberatungen durchgeführt, wobei über die Erfahrungen reflektiert und diskutiert sowie die passende Sportaktivität gefunden wird.

Im kommerziellen Bereich könnte der COMET-Ansatz in verschiedenen Institutionen, die eine Vielfalt an Sportkursen anbieten, integriert werden. Mögliche Schweizer Institutionen wären die Volkshochschule, die Klubschule Migros, die Pro Senectute[5] oder der Hochschulsport an Universitäten. Die Sportberatung würde in diesen Institutionen zum einen Einsteigerinnen und Einsteigern die Möglichkeit bieten, sich im «Angebotsdschungel» zurecht zu finden und ein passendes Angebot auszuwählen. Zum anderen könnte die bestehende Kundschaft weitere passende Angebote finden, was für die Anbietenden gegebenenfalls Mehreinnahmen generieren würde. In all diesen Institutionen würde die zu beratende Person nach einem Erstgespräch mit der Reflexion über die eigenen Motive und Ziele verschiedene passende Sportangebote besuchen sowie in einem Anschlussgespräch über die gemachten Erfahrungen mit der Beraterin oder dem Berater diskutieren.

Auch für das betriebliche Gesundheitsmanagement eines Unternehmens wäre die Sportberatung interessant. Es zeigt sich, dass Gesundheitsförderungsprogramme am Arbeitsplatz wirksame Methoden sind, um mitarbeiterbezogene Kosten zu senken (z. B. Lutz et al., 2019; van Dongen et al., 2011). Besteht in einem Unternehmen bereits ein Sportangebot, könnte mit Hilfe der Sportberatung das passende Angebot für die Mitarbeitenden gefunden werden (analog den oben beschriebenen Institutionen). Falls kein eigenes Sportangebot vorhanden ist, bestünde die Möglichkeit, mit externen Sportanbietenden zusammenarbeiten, um für die Mitarbeitenden ein passendes Angebot ausserhalb des Unternehmens zu finden. Ausserdem könnten Krankenkassen die Sportberatung in ihre Angebotspalette aufnehmen, sei das als Online-Sportberatung eingegliedert in eine vorhandene Smartphone-Applikation (z. B. myCSS-App[6]) oder als reales Beratungsgespräch. Eine zusätzliche Anwendungsmöglichkeit wäre der freiwillige Schulsport[7], wobei der COMET-Ansatz auf Kinder und Jugendliche angepasst werden müsste.

4.2.2 Beratungsperson

Einzelne Anteile des COMET-Ansatzes lassen sich in die Ausbildung von Bewegungs- und Sporttherapeutinnen und -therapeuten eingliedern. In der Bewegungs- und Sporttherapie werden gestörte körperliche, psychische und soziale Funktionen regeneriert sowie vorgebeugt und das gesundheitliche Verhalten wird gefördert (Vanden-Abeele & Schüle, 2012). Der klientenzentrierten Gesprächsführung kommt dabei eine Schlüsselrolle zu (Rauscher, 2004), wobei zusätzliche Empfehlungen bestehen, die motivierende Gesprächsführung vermehrt in die Sport- und Bewegungstherapie einzubauen (Messner, 2018). Es werden zwar bereits heute Verhaltensänderungstechniken (Michie et al., 2013) wie die Handlungs-

[5] Die Volkshochschule und die Klubschule Migros bieten schweizweit Kurse in unterschiedlichen Bereichen (u. a. Sprachen, Kultur, Management, Bewegung und Gesundheit) an. Ihre Zielgruppe sind erwachsene Personen. Die Pro Senectute ist die grösste Dachorganisation der Schweiz, die Beratungen und Aktivitäten für Personen ab 65 Jahren anbietet. Im Bereich Bewegung und Sport führen sie zahlreiche Kurse durch.

[6] Neben Funktionen für Rechnungen und die Übersicht über die Leistungen hat die myCSS-App auch eine Chat- oder Telefon-Funktion. Die CSS ist eine der grössten Krankenkassen der Schweiz.

[7] Der freiwillige Schulsport führt Sportangebote durch, die ausserhalb des obligatorischen Schulsports oder des Vereinssports stattfinden. Meist werden die Angebote von den Kantonen oder Gemeinden organisiert.

oder und Bewältigungsplanung angewendet, jedoch noch selten. Zudem könnte neben diesen beiden Elementen auch das Erfragen der individuellen Präferenzen im Sport im Therapiealltag umgesetzt werden.

Nun stellt sich die Frage, welche Personen geeignet sind, um Sportberatungen durchzuführen. Sportberaterinnen und Sportberater müssen zwei verschiedene Bereiche gut abdecken. Zum einen muss ein vielseitiger Erfahrungsschatz hinsichtlich verschiedenen Sportaktivitäten vorhanden sein und zum anderen muss die Person die motivierende Gesprächsführung beherrschen (Miller & Rollnick, 2015). Verschiedenste Sporterfahrungen sind deswegen ein wichtiger Aspekt, weil im Beratungsgespräch mit den Personen gemeinsam die Merkmale von einzelnen Sportaktivitäten herausgeschält werden. Wenn eine Beraterin oder ein Berater die Sportaktivität bereits einmal (oder mehrmals) ausgeübt hat, gelingt dieses Herausschälen besser. Die motivierende Gesprächsführung hingegen kann sich eine Person in einem Kurs aneignen. Für das kompetente Umsetzen in einem Gespräch benötigt es zusätzlich zu einem Kurs dennoch zahlreiche Übungsstunden. Den grossen Erfahrungsschatz bringen insbesondere Sportwissenschaftlerinnen und Sportwissenschaftler mit, weil sie in ihrem Studium eine Vielfalt an Sportaktivitäten durchführen sowie ausprobieren und dadurch Fachkompetenzen erwerben. Die Herausforderung im Beratungsgespräch besteht darin, Fragen oder Probleme der Personen mit dem vorhandene Erfahrungswissen zu lösen oder zu beantworten. Sportwissenschaftlerinnen und Sportwissenschaftler scheinen somit als Sportberatende prädestiniert zu sein. Hingegen haben beispielsweise Physiotherapeutinnen und Physiotherapeuten aufgrund ihrer Ausbildung eine medizinisch-funktionale Orientierung und sind bezüglich dem Sporterfahrungsschatz im Hintertreffen. Dieselbe Orientierung haben Ärztinnen und Ärzte, wobei hinzukommt, dass sie keine zeitlichen Ressourcen für eine ausführliche Beratung haben (Sudeck, 2007).

Auch wenn die Beratungsperson Erfahrungen (bzgl. verschiedenen Sportaktivitäten oder Gesprächstechniken) mitbringt, eine Schulung zu den wichtigsten Inhalten und ausgiebiges Üben in realen Gesprächen ist unumgänglich. Dabei wird der halbstandardisierte Gesprächsleitfaden idealerweise zuerst in verschiedenen Rollenspielen zu zweit oder zu dritt geübt. Typischerweise wird danach mit Videofeedback gearbeitet, dazu wird das Übungsgespräch mit einer realen Person auf Video aufgenommen. Die Beratungsperson muss sich danach das eigene Videogespräch anschauen, sich selbst beurteilen und Videoannotationen anfügen. Zusätzlich fügen ein bis zwei anderen Personen (am besten anonym) ebenfalls Videoannotationen hinzu. Dies bedeutet, dass an einer beliebigen Stelle im Gespräch ein Kommentar eingefügt wird, was auffällt (z. B. «Hier schneidest du deinem Gegenüber das Wort ab»). Die Beratungsperson schaut sich danach das eigene Video an und kann in den spezifischen Gesprächssituationen die Bemerkungen der anderen Personen und die eigenen lesen. Diese Selbst- und Peerevaluation hilft, das Beratungsgespräch zu verbessern.

4.2.3 Kontrollgruppe

Als weitere Forschungsaufgabe ist zu prüfen, welche anderen Kontrollgruppen es gibt, um sie mit der Sportberatung bzw. dem COMET-Ansatz zu vergleichen. Im klinischen Bereich wäre ein Vergleich mit (1) der bestehenden Versorgung in der Rehabilitation (z. B. für die Bariatrie die medizinische, ernährungswissenschaftliche und psychologische Betreuung) und dieser bestehenden Versorgung mit einer zusätzlichen Sportberatung sinnvoll. Ausserdem könnte die Sportberatung mit (2) einer Beratung basierend auf motivationaler Gesprächsführung aber ohne Fokus auf Präferenzen (z. B. Beratungen wie bei Barrett et al., 2020) verglichen werden. Zusätzlich wäre zu prüfen, ob die vorgestellte Sportberatung im Vergleich mit (3) einer telefonischen Sportberatung (z. B. Kolt et al., 2007) oder (4) einer internetba-

sierten Sportberatung (für eine Übersicht siehe Davies et al., 2012) dieselben Effekte erzielt. Auch interessant wäre es herauszufinden, ob die angewendeten zwei Kontakte (Beratungsevent und Telefon-Booster) im Vergleich mit (5) mehreren Kontakten (z. B. acht Kontakte: Chemtob et al., 2019; zwölf Kontakte: Fischer et al., 2019) die Effekte verändern. Ausserdem wäre zu prüfen, inwiefern das Sammeln von Sportaktivitätserfahrungen am Beratungsevent im Vergleich mit (6) dem Sammeln von Erfahrungen in alltäglichen Sportangeboten (z. B. im Verein, im Fitnessstudio, etc.) oder gar (7) ohne das Sammeln von Erfahrungen, sondern nur mit Reflexion über einzelne Sportaktivitäten, eine Veränderung der Effekte mit sich bringt.

4.2.4 Outcome-Variable Sportvolumen

Als Outcome-Variable wurde unter anderem das Sportvolumen gewählt, was durchaus kritisch betrachtet werden kann. Gemäss dem Modell der bewegungsbezogenen Gesundheitskompetenz (PAHCO; Sudeck & Pfeifer, 2016), mit dem die motivationale Kompetenz verknüpft ist, soll nicht nur die Quantität (der Umfang der Sportaktivität, hier das Sportvolumen), sondern auch die Qualität (Gesundheitswirksamkeit der Aktivität) der Sportaktivität in den Blick genommen werden. Das bedeutet unter anderem, dass eine Sportaktivität nicht nur häufig und intensiv durchgeführt, sondern dass sie auch adäquat auf die individuelle körperliche Verfassung und das psychische Wohlbefinden abgestimmt werden soll (Carl et al., 2020). Dies würde bedeuten, dass zusätzlich zum Sportvolumen beispielsweise auch die subjektive Vitalität (Goldbeck et al., 2019) erfasst würde. Die Vitalität wird als wichtiger Indikator für das Wohlbefinden angesehen und als körperliche und geistige Energie definiert, die für zielgerichtetes Handeln genutzt werden kann (Ryan & Deci, 2008). Auch die Bewegungsfreude könnte eine passende Alternative sein (Stanley et al., 2009). Diese beiden Grössen würden somit die Qualität abdecken, während das Sportvolumen die Quantität abdeckt.

4.3 Die Kompetenzmessung

Des Weiteren ist zu diskutieren, ob die Selbsteinschätzung das passendste Mittel ist, um die motivationale Kompetenz zu messen. Fragebogenerhebungen auf der Basis von Selbsteinschätzungen sind sensitiv gegenüber Verfälschungen (z. B. soziale Erwünschtheit; Moosbrugger & Kelava, 2020). Dies bedeutet auch, dass das gewählte Verfahren (hier Selbsteinschätzung) grundsätzlich nur eine Annäherung an das latente Konstrukt (hier motivationale Kompetenz) möglich macht (Maag Merki & Grob, 2003). Validierungsprozesse bei der Entwicklung eines Fragebogens (u.a. Konstrukt- und Kriteriumsvalidität) steuern diesem Problem wiederum entgegen. Dennoch wäre es wünschenswert, die motivationale Kompetenz zusätzlich objektiv (in der Performanz) zu erfassen. Dies würde bedeuten, tatsächliche Verhaltensweisen in bestimmten Situationen zu prüfen (z. B. bei einer Aufgabenbewältigung in einem Test). Es liesse sich beispielsweise eine Aufgabe kreieren, wobei zwei Begriffe miteinander verbunden werden müssen (für ein Beispiel siehe Volk et al., in press). Es könnten in der linken Spalte verschiedene Sportaktivitäten und in der rechten Spalte verschiedene Motive und Ziele aufgelistet sein. Die Aufgabe der Person wäre es, die Sportaktivitäten mit den Motiven und Zielen zu verbinden, die von dieser Sportaktivität angesprochen werden (im Sinne der Anreize). Es könnten aber auch offene Fragen bzw. eine Textaufgabe gestellt werden, beispielsweise: *Nora treibt Sport, um ihr Gewicht zu halten und fit zu bleiben. Sie möchte mit dem Sport zudem präventiv auf ihr Herzkreislaufsystem einwirken. Nora hat nun ein Kurs zum zeitgenössischen Tanz besucht und hat sich währenddessen nicht wohl gefühlt. Nun ist sie unzufrieden. Was sind die Gründe für die das Unwohlsein und die Unzufriedenheit von Nora?* Mit solchen Aufgaben könnten Teilkomponente der motivationalen Kompetenz (siehe Kapitel 2.3) erfasst werden. Es gibt verschiedene weitere Möglichkeiten, Kompetenzen zu messen (für eine Übersicht siehe von Rosenstiel, 2017). Im Bereich der Gesundheitskompetenz (z. B. Sudeck & Pfeifer, 2016) hat sich das

Selbsteinschätzungsverfahren als positiv erwiesen und vielversprechende Ergebnisse hervorgebracht, deswegen wurde für die motivationale Kompetenz eine Skala zur Selbsteinschätzung konzipiert (siehe Kapitel 3.2).

4.4 Fazit

Die Resultate dieser Dissertation verdeutlichen, dass die motivationale Kompetenz valide und reliabel erfasst werden kann. Es liegt somit eine neue Skala zur Messung der motivationalen Kompetenz vor, die ökonomisch ist. Zudem wurde der COMET-Ansatz bei gesunden, aber wenig sportlich aktiven Erwachsenen positiv aufgenommen und wurde erfolgreich umgesetzt.

Der Theorie-Praxis-Transfer von der Konzeption über die Umsetzung bis zur Wirksamkeitsprüfung der individuellen Sportberatung wurde somit vollbracht. Weitere Forschung ist nötig, um den Beratungsansatz zu optimieren (z. B. hinsichtlich der Dauer bzw. dem Auslagern von einzelnen Beratungselementen). Zusätzlich ist dessen Übertragung auf andere Zielgruppen (z. B. klinische Stichproben, freiwilliger Schulsport) und Kontexte (z. B. kommerzielle Anbietende wie Krankenkassen) zu prüfen.

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Anhang A: Beitrag 1

Schmid, J., Schorno, N., Gut, V., Sudeck, G., & Conzelmann, A. (2020). "What type of activity suits me?" Development and implementation of the exercise and sport counselling approach COMET. *Zeitschrift für Sportpsychologie, 27*(4), 127–138. https://10.1026/1612-5010/a000309

Original Article

"What Type of Activity Suits Me?"

Development and Implementation of the Exercise and Sport Counseling Approach COMET

Julia Schmid[1], Nina Schorno[1], Vanessa Gut[1], Gorden Sudeck[2], and Achim Conzelmann[1]

[1]Institute of Sport Science, University of Bern, Switzerland
[2]Institute of Sport Science, University of Tübingen, Germany

Abstract: Counseling is seen as a promising method for promoting exercise behavior. The aims of this study were (1) to describe the design of a novel *counseling approach based on motives and goals in exercise and sport* (COMET). The COMET approach considers individual preferences, while focusing on identifying suitable types of activities. Furthermore, (2) implementation of the counseling was evaluated. A survey was carried out where 37 and 56 participants, were asked about their satisfaction with the counseling. In-depth interviews were conducted with a subsample of seven participants. Sixteen counsellors were questioned about implementation fidelity. The results showed that the COMET approach was implemented successfully in a nonclinical setting. Overall, participants were satisfied with the counseling. They found the trial exercise sessions helpful, as they offered diverse experiences and the opportunity to reflect on them. One-to-one conversations with the counselor were also beneficial, allowing participants to identify their preferences. Implementation fidelity was good. Further research could examine the implementation of the COMET approach in different settings.

Keywords: exercise promotion, individualized intervention, motivation, exercise experiences, preferences

„Welcher Sport passt zu mir?" Entwicklung und Implementierung des Sportberatungs-Konzepts COMET

Zusammenfassung: Beratung gilt als eine vielversprechende Methode der Bewegungs- und Sportförderung. Ziel der vorliegenden Studie war es, 1) der neue Beratungsansatz COMET vorzustellen, der individuelle Motive und Ziele berücksichtigt und die Identifizierung passender Sportaktivitäten fokussiert. Weiter wurde 2) die Umsetzung der Beratung evaluiert. Dafür wurden 37 resp. 56 Teilnehmende schriftlich zu ihrer Zufriedenheit mit der Beratung befragt. Mit weiteren sieben Teilnehmenden wurde ein Interview geführt. 16 Beratende bewerteten schriftlich die Wiedergabetreue der Intervention. Die Studienergebnisse zeigen, dass der COMET-Ansatz in einem nicht-klinischen Umfeld erfolgreich umgesetzt werden kann. Die Teilnehmenden waren insgesamt zufrieden mit der Beratung. Sie fanden die Schnuppersportangebote hilfreich, weil sie dadurch vielfältige Sporterfahrungen sammeln und reflektieren konnten. Durch das persönliche Gespräch mit dem Beratenden konnten sie ihre Präferenzen erkennen. Die Beratenden setzten die Intervention wie im Protokoll vorgesehen um. Weitere Forschungsarbeiten sollten untersuchen, inwiefern sich der COMET-Ansatz in anderen Settings anwenden lässt.

Schlüsselwörter: Bewegungsförderung, individualisierte Intervention, Sporterfahrungen, Präferenzen

Counseling is generally perceived as a promising method for promoting behavior change in clinical and nonclinical populations. Therefore, the World Health Organization (2018) aims to develop and implement standardized counseling approaches. "Counseling" is defined as an "interaction offering an opportunity for a person to explore, discover and clarify ways of living with greater well-being, usually in a one-to-one discussion with a trained counselor" (World Health Organization, 2018, p. 97). One advantage of counseling is that the individual's personal characteristics can be carefully considered and used to tailor advice (Hawkins et al., 2008). In the field of exercise and sport, it can be conducted by diverse health professionals, such as exercise specialists, physical therapists, or physicians in both primary and secondary preventions.

Existing counseling approaches adopt either a predominantly medical or psychological focus. *Medical counseling concepts* aim to identify appropriate training loads (e.g., intensity, duration) for the purpose of improving physical performance, maximizing health gains, and avoiding health risks (Orrow et al., 2012). In contrast, *psychological counseling concepts* addresses relevant personal factors (e.g., motivation, volition) for long-term exercise and sport behavior change (e.g., Göhner et al., 2012). Regardless of the focus of the counseling, intervention materials often include general recommendations, such as "choose

https://doi.org/10.1026/1612-5010/a000309

activities you enjoy" (American College of Sports Medicine, 2018), or "pick something you like to do" (Office of Disease Prevention and Health Promotion, 2008). However, it remains unclear how people find out what activity type actually suits them. This shortcoming is surprising, as the literature highlights the need to address personal preferences in exercise promotion (Whitlock et al., 2002; World Health Organization, 2018).

To close the aforementioned research gap, we propose the novel COMET approach *(counseling based on motives and goals in exercise and sport)*. It systematically includes individual preferences, with a focus on identifying suitable types of activities. The present article has two aims: The first is to describe the design of the intervention. As such, the theoretical foundations of this approach to counseling are presented, the intervention objectives identified, the core elements of the counseling approach deduced, and an intervention package of materials developed. Such a detailed description of the intervention not only helps to make the basic idea of the counseling approach comprehensible, but also simplifies its reproducibility. The second aim is to take a more practical view by evaluating its implementation. Thereby, the focus is on the two implementation outcomes, acceptability and fidelity. *Acceptability* refers to the degree to which a specific intervention is perceived as satisfactory or agreeable. In contrast, *fidelity* refers to how strictly an intervention is implemented as intended by the intervention developers or as proposed in the protocol (Peters et al., 2014). Evaluating the implementation of the counseling is crucial, as it highlights the factors that influence the successful adoption of the intervention in the real world. It therefore offers a greater understanding of how the counseling approach can be transferred to diverse systems or settings (Peters et al., 2014).

Counseling Design

Theoretical Foundation

COMET is based on two lines of research: firstly, on the theory of person-environment fit, which states that a match between people's characteristics and their environment results in positive outcomes. More precisely, the theory claims that the fit can better predict the outcomes compared to its components taken separately. Moreover, it is assumed that individuals strive to find a suitable fit, because they generally prefer consistency and certainty (van Vianen, 2018).

Person-environment fit theories have been developed and tested mainly in organizational psychology (e.g., person–vocation fit; Holland, 1997). However, general assumptions of fit theories are also confirmed in the field of sport and exercise. A fit between a person's motives and goals and the incentives of an activity, indeed, resulted in an improvement in their affective well-being and maintenance behavior change (Klusmann et al., 2016; Schmid et al., 2021; Sudeck & Conzelmann, 2011). Explicit motives refer to the willingness to strive for certain goal conditions that will endure over time and in different situations (Brunstein, 2010). Personal goals, in turn, are defined as cognitive representations of events, states, and processes which an individual wants to achieve, maintain or, avoid (Austin & Vancouver, 1996). People are not encouraged by one single motive or goal. On the contrary, they have different, yet concurrent, reasons for doing exercise and sport, such as stress reduction, a love of aesthetic movements, and health benefits (Lehnert et al., 2011; Schmid et al., 2018). Consequently, it makes sense to use counseling as an opportunity to examine an individual's motive and goal *profile* and to adjust the resulting advice accordingly. Whether a specific set of motives can be satisfied depends not only on the type of activity (e.g., running), but also on its social and organizational setting (e.g., alone on a treadmill in a gym vs. outdoors with friends).

The second line of research relevant to the COMET approach is motivational interviewing (MI; Miller & Rollnick, 2013). This is an effective way for promoting physical activity (e.g., Samdal et al., 2017) and can be characterized as a person-centered, collaborative counseling style. It takes into account that people are the experts on themselves. They have intrinsic motivations and inner resources which need to be evoked for change to occur (Miller & Rollnick, 2013). Hardcastle et al. (2017) point to two differing MI techniques: Relational techniques relate to the interpersonal style in which an intervention is delivered. In contrast, content-based techniques relate to the knowledge and skills clients are taught to promote commitment to their behavior change,[1] addressing the question of what is delivered to clients rather than how it is delivered. As shown in Table 1, three relational techniques were relevant in the present study: (1) Counselors ask *open-ended questions* which invite the clients to reflect and elaborate. (2) Counselors make *reflective statements*. These not only help counselors to clarify if their understanding is accurate, but also allow clients to hear again their expressed thoughts and feelings. This fosters their self-awareness. Finally (3) counselors make *summary statements*, useful for transitioning from one task to another or ending a session. Two content-based techniques were relevant for the present

[1] These content-based MI techniques overlap with behavior change techniques. For a detailed comparison see Hardcastle et al., 2017.

Table 1. Applied motivational interviewing techniques

Type	Name of technique	Definition
Relational	Open-ended questions	The counselor asks questions that cannot be answered with a limited response (i.e., yes, no, maybe, twice)
	Reflective statements	The counselor paraphrases the client's comments by repeating back what the client has said
	Summary statements	The counselor pulls together everything that the client has said and offers a summary
Content-based	Developing a change plan	The counselor prompts the client to develop a specific change plan that the client is motivationally ready to accept
	Troubleshooting	The counselor prompts the client to think about potential barriers and identify ways of overcoming them

Note. Definitions derived from Hardcastle et al. (2017).

study: (1) Counselors encourage clients to *develop a change plan* and (2) assist them in *troubleshooting*. Both techniques foster clients' self-control in implementing their intentions.

In short, the presented research illustrates that counseling is not so much about simply prescribing an activity, but rather about encouraging people to identify their preferences and guiding them to find an exercise and sport activity that matches their individual motives and goals.

Counseling Objectives

The main objectives of the COMET approach are to promote motivational competence, self-concordance, and self-control. *Motivational competence* refers to a "person's ability to reconcile current and future situations with their activity preferences" (Rheinberg & Engeser, 2010, p. 532). In the context of exercise and sport behavior, motivational competence consists of the following components: (1) a person is aware of their motives and goals in exercise and sport; (2) they are able to evaluate the incentives of different activities, and if necessary, (3) they can reshape activities to suit individual motives and goals (Rheinberg & Engeser, 2010; Schorno et al., 2021). *Self-concordance* refers to the degree to which a specific goal intention is congruent with one's basic needs and personal values. It is seen as a continuum ranging from an intrinsic mode in which a person wants to engage because the physical activity is inherently interesting, to an extrinsic motivation mode in which a person wants to be active because of external pressure or positive consequences (Sheldon & Elliot, 1999). Finally, *self-control* refers to the ability to regulate one's behavior. High self-control enables people to focus on long-term goals while facing impulses, urges, and distractions (Carver & Scheier, 1998).

In line with theoretical considerations and empirical studies, it is assumed that increased motivational competence, self-concordance, and self-control lead to more regular exercise and sport behavior (Bélanger-Gravel et al., 2013; Fuchs et al., 2016; Rheinberg & Engeser, 2010).

Counseling Elements

The above-mentioned objectives are to be achieved in COMET through the application of various elements. In the following section, these elements are presented along the lines of the five "A"s concept of Whitlock et al. (2002). This is a unifying framework for describing and evaluating behavioral health counseling interventions. The idea behind the five "A"s is to *assess* people's health behavior and the factors affecting it, to give *advise*, to make a shared *agreement* about behavioral goals, to *assist* in achieving them, and finally, to *arrange* follow-up contacts to provide ongoing support (see Table 2).

Counseling starts with (elements 1a and 1b in Table 2) a standardized assessment of personal factors relevant for exercise and sport behavior. Clients fill out the Bernese Motive and Goal Inventory (BMZI; Lehnert et al., 2011; Schmid et al., 2018), on the basis of which a wide range of motives and goal contents can be assessed. For each person, an individual motive and goal profile is specified, based on an intraindividual standardization (Sudeck et al., 2011). In this procedure, motives and goals are weighted for each person, which, in turn, allows insight into individual rank order. Based on the individual profile, what is referred to as the *motive-based type of sports person* is determined. Using cluster analysis, Sudeck et al. (2011) identified nine characteristic profiles among people in middle adulthood. For counseling, clients are allocated to the type of sports person who had the most similar motive and goal profile. To find out more about people's experiences and skills, counselors assess past and current exercise and sport behavior in a structured interview. To measure the past behavior, they ask clients about the exercise and sport activities they have completed during their life course, including their activity settings. To measure cur-

Table 2. Overview of the exercise and sport counselling elements of COMET

Five "A"s[a]	Counseling elements and questionnaires used		Components of motivational interviewingb	Procedure	Time needed
Assess	(1a)	Assessing preferences: • Motives and goal contents in exercise and sport: figure / appearance, contact, competition / performance, aesthetics, distraction / catharsis, fitness / health, activation/enjoyment (Lehnert et al., 2011; Schmid et al., 2018) • Individual motive and goal profile • Motive-based types of sports person (Sudeck et al., 2011)		Computer-based survey	5 – 10 min
	(1b)	Assessing exercise and sport behavior: • Current behavior: type of exercise and sport, frequency and duration per episode (Fuchs et al., 2015) • Past behavior: type of exercise and sport, settings (Sudeck et al., 2011)		One-to-one conversation, structured interview	10 min
	(2)	Explanation of and structured reflection on: • Individual motive and goal profile • Motive-based types of sports person	Open-ended questions; reflective statements	One-to-one conversation, semistructured interview	5 – 10 min
	(3)	Trial exercise and sport sessions: • Three sessions with different focuses in terms of content Assessing exercise and sport experiences before, during, and after each session: • Exercise and sport experience following motives and goal contents: figure / appearance, contact, competition / performance, aesthetics, distraction/ catharsis, fitness / health, activation / enjoyment • Enjoyment and affective states (Hardy & Rejeski, 1989; Stanley et al., 2009) • Perceived exertion (Borg, 1998)		Guided group sessions Smartphone-based survey (movisensXS)	110 min (three exercise and sport sessions of 30 min each, 10-min break between sessions)
Advise / assist	(4)	Structured reflection and shared discussion about: • Exercise and sport experiences assessed during trial sessions • Suitable activity types • Local exercise and sport provider	Open-ended questions; reflective statements	One-to-one conversation, semistructured interview	20 min
Agree	(5)	Structured reflection and shared decision making about: • Concrete change plan	Reflective statements; summary statements; develop a change plan		
Arrange	(6)	Structured reflection and shared discussion about: • Implementation of the change plan in everyday life • If appropriate: adaptation of the change plan based on exercise and sport experiences • If appropriate: potential barriers and ways of overcoming them	Open-ended questions; reflective statements; summary statements; adapt / develop a change plan; troubleshooting	One-to-one conversation on the phone, semistructured interview	approx. 20 min

Note. [a] According to the five "A"s by Whitlock et al. (2002); [b] According to the taxonomy of motivational interviewing by Hardcastle et al. (2017).

rent exercise and sport behavior, a validated questionnaire is used (Fuchs et al., 2015). Clients name up to three activities they have performed in the last 4 weeks and indicate both frequency and duration for each.

The collected data are used to form (element 2 in Table 2) individual feedback on the motive and goal profile and the motive-based type of sports person (see a specific example in Electronic Supplementary Material 1), and the counselor explains this in a one-to-one conversation. To foster the client's awareness of their preferences, the counselor asks them an open-ended question about their personal impression of their motive and goal profile. The counselor also makes reflective statements by paraphrasing the client's comments (Hardcastle et al., 2017; Miller & Rollnick, 2013).

Directly following this conversation, the client takes part in three trial exercise and sport sessions (element 3 in Table 2). Trained instructors hold the trials in small groups (approx. 10 individuals). All individuals participate in all three sessions in a row, but the order of visits is randomized. Each session last 30 minutes, with a break of 10 minutes in between. Sessions are similarly structured (warm-up, main part, cool down) but cover diverse motives and goals (see Table 3). In each session, the client uses their smartphones to record their affective state (Hardy & Rejeski, 1989), enjoyment (Stanley et al., 2009), exercise and sport experiences following motives and goal contents and exertion (Borg, 1998).

The counseling event continues with a one-to-one conversation (element 4 in Table 2). To encourage people to reflect on incentives in the activities experienced, the counselor asks which session they liked the most and which the least. With an open-ended question, the counselor prompts the client to express reasons for their opinion. Again, the counselor makes reflective statements by repeating back what the client has said. After that, the counselor leads the client through the feedback for their exercise and sport experiences (for a specific example, see Electronic Supplementary Material 2), focusing on the favored session (Miller & Rollnick, 2013). Together with the client, they discuss to what extent these exercise and sport experiences match their individual motive and goal profile, and how this influenced their affective state and enjoyment during the activity. Based on this discussion, counselor and client work together to deduce potentially suitable activities. The final advice is also inspired by the work of Sudeck and Conzelmann (2011), who evaluated and defined matching exercise and sport activities for each motive-based type of sports person.

In the same conversational setting, the counselor then assists the client in (element 5 in Table 2) developing a change plan. They collaboratively select an activity type and define what the client would do to implement it in their everyday life. During the whole discussion, counselors emphasize the client's autonomy by acknowledging their free choice. The counseling event closes with the counselor giving a summary statement (Hardcastle et al., 2017; Miller & Rollnick, 2013).

Four weeks after the event, clients get an intervention "booster shot," consisting of a one-to-one conversation (element 6 in Table 2), this time on the telephone. Clients are asked to what extent they have been able to implement the plan in their everyday life, and what experiences they have had. Depending on the answers to these open-ended questions, the change plan is adapted. Furthermore, when deemed appropriate, the counselor will guide the client through a troubleshooting session, prompting them to identify barriers and think about strategies to face them. Throughout the whole conversation, the counselor makes reflective statements, and draws the session to a close with a summary statement (Hardcastle et al., 2017; Miller & Rollnick, 2013).

To summarize, we expected the assessment and structured reflection, both on individual motives and goals

Table 3. Activities in the three trial exercise and sport sessions

	Session A	Session B	Session C
Incentives	Figure / appearance, fitness, health	Contact, competition / performance	Aesthetics, distraction / catharsis
Warm-up 5 min	Dynamic stretching and gentle strengthening exercises, e.g., jumping jacks, high knees, squats with upper-body rotation	Name game with light running	Full-body mobilization with flowing movements, e.g., leg swings, easy body waves, hip circles
Main part 20 min	Cardio exercises, e.g., running around doing lunge jumps when the instructor claps; core-strength exercises	Competitive group games with the ranking announced afterwards, e.g., ball tag, relay races with a hula hoop	Several dance activities with music; Tai Chi exercises focusing on breathing and soft movements
Cool down 5 min	Full-body stretching, e.g., hamstrings and lower back, neck, and chest	Cooperative game, e.g., the whole group stands in a circle holding hands, one half leans forward, the other half backward	Body-awareness exercises, standing, with eyes closed

(counseling elements 1 and 2), and on incentives in different exercise and sport activities (counseling element 3) to help people find suitable activities (counseling elements 4 and 5), and consequently, to gain motivational competence (Rheinberg & Engeser, 2010). Furthermore, we assume that by applying the content-based MI techniques, the client's self-control will be promoted, enabling them to implement the activities in everyday life (counseling element 6; Bélanger-Gravel et al., 2013). In contrast, using relational MI techniques throughout the whole counseling process may increase the participant's intrinsic and identified motivation (Vansteenkiste & Sheldon, 2006).

Counseling Materials

Various materials were developed to ensure that the COMET approach as described above could be carried out in a standardized manner and are comprehensible to each participant. Materials for counselors include (a) a handbook explaining the goal and theoretical background of the counseling approach and (b) a semistructured counseling protocol[2] (available on request, from the first author), complete with the specific procedure and key elements of the one-to-one conversations (e.g., open-ended questions).

Materials for clients include (a) printed feedback for their individual motive and goal profile and their allocated motive-based type of sports person (see Electronic Supplementary Material 1). They also receive (b) feedback for their exercise and sport experiences, as assessed during trial sessions (see Electronic Supplementary Material 2). Furthermore, clients get (c) a standardized description of potentially matching exercise and sport activities based on their motive-based type of sports person (Sudeck & Conzelmann, 2011). Finally, they receive (d) a list of local exercise and sport providers (e.g., sport clubs, gyms, dance studios), which should help them to find a suitable organizational and social setting for their exercise and sport activities.

Evaluating the Implementation of the Exercise and Sport Counseling

Research Questions

To evaluate the implementation of the exercise and sport counseling, the five research questions listed below were posed. Questions 1 to 3 considered the acceptability of the intervention, whereas questions 4 and 5 referred to its fidelity (see Table 4; Peters et al., 2014).

1. Overall how satisfied were participants with the counseling event?
2. How helpful were single elements of the counseling for participants?
3. Why were any single elements of the counseling helpful for participants?
4. To what degree was the counseling implemented as proposed in the protocol?
5. Which factors affected implementation fidelity?

Referring to the five "A"s by Whitlock et al. (2002), this study focused on the areas, assess, advise/assist, and agree, whereas it did not cover the area arrange (see Table 2).

Methods

The data were collected in two counseling studies in spring 2018 (pilot study) and spring 2019 (main study). The counseling was organized by the University of Bern in cooperation with a health insurance company and advertised through a monthly health insurance newsletter and social media networks.

The implementation of the counseling was evaluated both with participants and counselors. Table 4 gives an overview of the associated research questions and specific methods used. However, some procedures need further clarification. To investigate why single elements of the counseling were perceived as helpful (research question 3), semistructured telephone interviews were conducted. Participants of the pilot study with up to 75 minutes of exercise and sport per week (n = 12) were contacted by e-mail, and seven of them finally agreed to a telephone interview. The 75-minute cutoff time was chosen in accordance with guidelines given by the World Health Organization (2010). Table 4 and Electronic Supplementary Material 4 show a detailed description of the sample. The interviewers had a semistructured interview protocol to guide them through the conversation. Examples of questions from the telephone interview include "With the counseling we aimed to give you an impulse to change your exercise and sport behavior. Keeping this in mind: How helpful were the trial exercise and sport sessions for you? Why was it helpful?" We also asked this question in relation to the one-to-one conversations (see Table 2, counseling elements 2, 4, and 5). We used follow-up probes to elicit more detailed answers. Interviews lasted on average 12 minutes

[2] The counselling protocol can be requested from the first author.

(range 9–21 minutes). They were audio recorded, anonymized, and transcribed verbatim. The second author analyzed the data in line with the conventions of thematic analysis (Braun & Clarke, 2006), followed by a review by the first author. All themes reported in the results were mentioned several times and by different participants. To investigate implementation fidelity and influencing factors (research questions 4 and 5), the 16 counselors of the main study were questioned immediately after each counseling session.

A specific training course for the counselors was held at the beginning of 2018 and 2019, for the pilot study and main study, respectively. The course was designed to ensure that the counselors acquired expertise in the counseling approach and became familiar with the intervention material. The training was conducted by the project team and attended by master's degree level students of sport and exercise science. It took place at the university and lasted 10 sessions of 90 minutes. For further details, see Electronic Supplementary Material 3.

Results

Overall satisfaction with the counseling (research question 1)

Results of the paper-and-pencil or online questionnaire showed that overall, participants were satisfied with the

Table 4. Overview of research questions and corresponding methods

Implementation outcomes[a]	Research question	Procedures and data analyses	Sample
Acceptability	1. Overall how satisfied were participants with the counseling event? 2. How helpful were any single elements of the counseling for participants?	• Paper-pencil questionnaire directly after the counseling event (pilot study), or online questionnaire 4 weeks after the counseling event (main study) • Rating on a 5-point Likert scale from 1 (*very dissatisfied*) to 5 (*very satisfied*) • Rating on a 5-point Likert scale from 1 (*not at all helpful*) to 5 (*very helpful*) • Paired *t*-tests to compare means	Participants of the pilot study • n = 37 • 70 % women • M_{age} = 39.73 years, SD = 14.53, age range 23 – 70 years • 11 % no exercise and sport; 22 % 1 – 75 min exercise and sport / week • 32 % overweight Participants of the main study • n = 56 • 68 % women • M_{age} = 42.25 years, SD = 13.31, age range 20 – 65 years • 73 % no exercise and sport; 13 % 1 – 75 min exercise and sport/week • 55 % overweight
	3. Why were single elements of the counseling helpful for participants?	• Telephone interview approx. 2 weeks after the counseling • Open questions	Selected participants of the pilot study • n = 7 • 71 % women • M_{age} = 35.57 years, SD = 7.98, age range 28 – 52 years • 29 % no exercise and sport; 71 % 1 – 74 min exercise and sport / week • 43 % overweight
Fidelity	4. To what degree was the counseling implemented as proposed in the protocol?	• Paper-pencil questionnaire directly after each counseling session • Separate rating of counseling elements 1–5 on a 4-point Likert scale from 1 (*not at all implemented as proposed*) to 4 (*fully implemented as proposed*) • One-way analysis of variance to compare means	Counselors of the main study • n = 16 • 56 % women • M_{age} = 25.81 years, SD = 3.08, age range 23 – 35 years
	5. Which factors affected implementation fidelity?	• Paper-pencil questionnaire directly after each counseling session • Open question	

Note. Referring to the "5As" by Whitlock et al. (2002), this study investigated acceptability and fidelity of the areas of assess (counseling elements 1 – 3), advise / assist (counseling element 4), and agree (counseling element 5), whereas it did not cover the area of arrange (counseling element 6; see Table 2). [a] According to Peters et al. (2014).

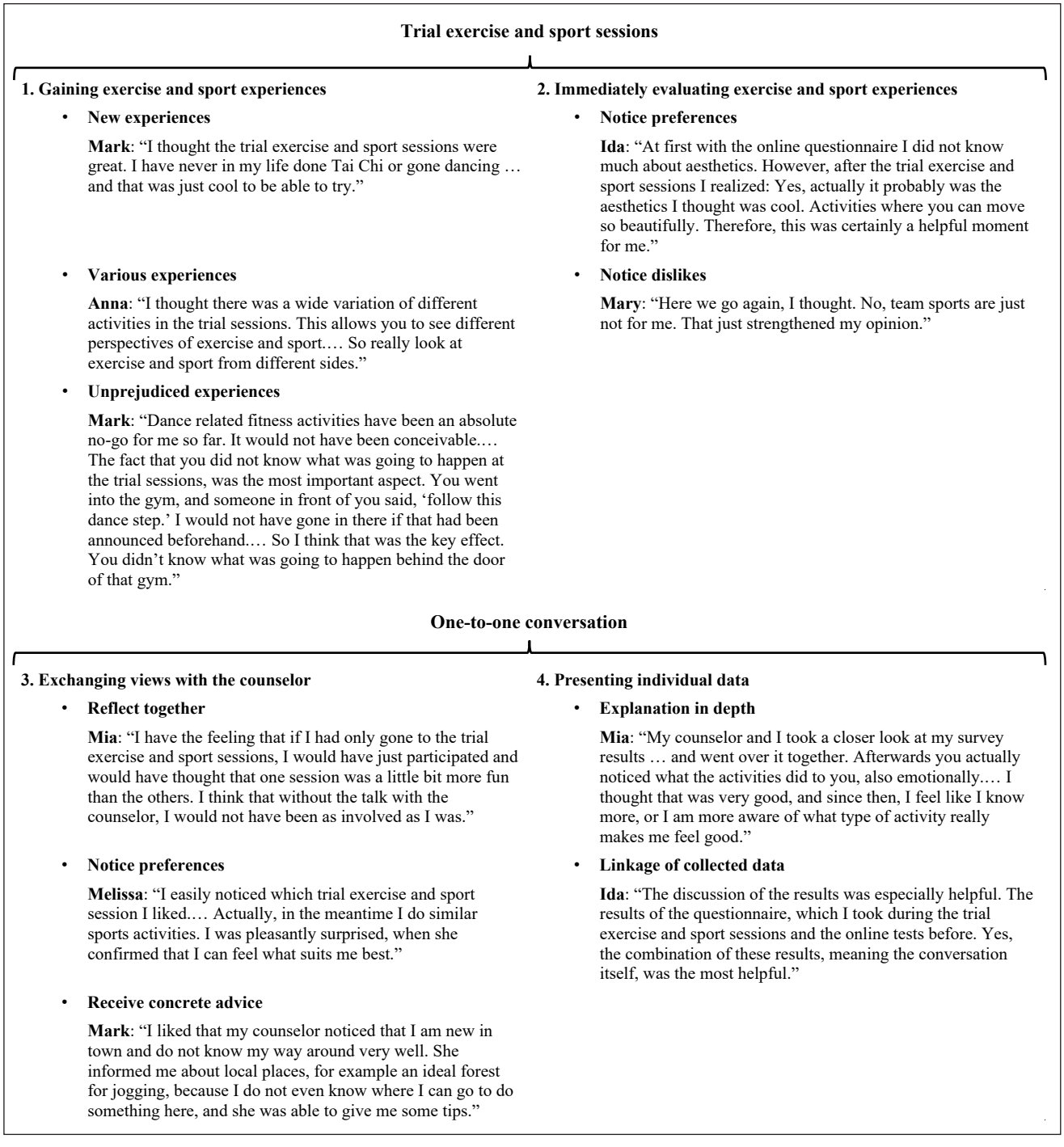

Figure 1. Themes and subthemes derived from the thematic analysis.

counseling event. However, the pilot study sample showed a more positive evaluation (M = 4.59, SD = 0.80) than the main study sample (M = 4.17, SD = 0.82).

Perceived helpfulness of single counseling elements (research questions 2 and 3)

In the questionnaire, participants had to decide how helpful selected elements of the counseling were. Participants mentioned the one-to-one conversation with the counselor as very helpful in determining which exercise and sport activities suited them (pilot study: M = 4.50, SD = 0.84; main study: M = 4.09, SD = 0.76), whereas the trial sessions were rated lower (pilot study: M = 4.22, SD = 0.91; main study: M = 3.76, SD = 1.13). However, the pilot study showed no significant difference, $t(36) = -1.555$, $p = .130$; whereas the main study did, $t(55) = -2.195$, $p = .03$, $d = 0.34$.

The seven semistructured interviews gave a deeper insight into why these counseling elements were perceived as more or less helpful. Four overarching themes could be derived. Whereas the first two were linked to the trial sessions, the last two were linked to the one-to-one-conversation (see Figure 1 for an overview and examples of statements).

Theme 1: Gaining exercise and sport experiences. Three of the interviewed participants reported that the trial sessions were helpful because they offered the opportunity to gain new experiences. Participants tried exercise and sport activities which they had not practised before. Some mentioned that they would not have done them on their own initiative.

The trial sessions focused on only two or three motives each (see Table 3), and were therefore thematically limited. However, the trial sessions varied widely among each other. Four participants highlighted the fact that the broad spectrum of activities helped them.

Two participants emphasized the importance of joining the trial sessions without preconceptions or expectations. Consequently, they went in with a more open attitude.

Theme 2: Immediately evaluating exercise and sport experiences. During and immediately after the trial sessions, participants evaluated their affective state, enjoyment, and exercise and sport experience, on the basis of motives and goal contents. For this, they had to reflect on the activities they had performed and their subjective experiences immediately afterward. Three participants indicated that this evaluation helped them to confirm their current preferences or discover new likings, while two participants thereby noticed their dislikes.

Theme 3: Exchanging with the counselor. Four participants appreciated the one-to-one conversation with the counselor because they reflected together about exercise and sport experiences in the trial sessions, and more generally, in their usual behavior.

While talking with the counselor, three participants became aware of their own preferences. In some cases, the counselor gave new inputs, whereas in other cases, the current exercise and sport activities were confirmed.

Theme 4: Presenting individual data. Two participants reported the presentation of all individual data as helpful because counselors illustrated and explained them in depth. Further, three participants indicated that counselors linked the different datasets (individual motive and goal profile, motive-based type of sports person, and experiences in trial sessions) and therefore provided an overview.

Implementation fidelity and its influencing factors (research questions 4 and 5)

The results of the paper-and-pencil questionnaire showed overall that counselors in the main study were able to implement one-to-one conversations accurately. However, their fidelity significantly differed between counseling elements, $F(4,39) = 10.035$, $p = .001$, partial $\eta^2 = .205$). They assessed the current and past exercise and sport behavior as proposed in the protocol (see Table 2, counseling element 1b: $M = 3.84$, $SD = 0.35$, range 2–4). They also explained and discussed the motive and goal profile as well as the motive-based types of sports person as planned (counseling element 2: $M = 3.69$, $SD = 0.40$, range 2.5–4). Counselors guided the reflections on exercise and sport experiences and suitable activity types with a similar level of quality (counseling element 4: $M = 3.63$, $SD = 0.47$, range 2–4). The counselors were least accurate in developing a concrete change plan (counseling element 5: $M = 3.46$, $SD = 0.52$, range 2–4) and adapting it in the telephone booster (counseling element 6: $M = 3.45$, $SD = 0.68$, range 1–4).

The counselors gave different reasons for the inaccuracy of the implementation. Two overarching themes could be derived.

Theme 1: Additional questions. In a total of six counseling, counselors mentioned that participants asked in-depth questions (e.g., explanation of the intraindividual standardization of the motive and goal scores) or wanted to know about other topics (e.g., nutrition, injuries). Counselors had to respond accordingly and invert the order of discussion to maintain the natural flow of the conversation.

Theme 2: Faced with dissonant data. In a total of seven counseling, counselors reported that some participants had a subjective impression contrary to what their data showed (e.g., identified motive-based type of sports person). Therefore, the discussion was modified, because it could not be handled according to the planned procedure.

Discussion

The goals of this study were to describe the design of a novel exercise and sport counseling approach and to evaluate its implementation. In contrast to existing approaches, the COMET systematically focuses on individual preferences and aims to identify suitable activity types. It is important for an individual to do a suitable activity as it improves their affective well-being and maintenance of their exercise and sport behavior (Klusmann et al., 2016; Sudeck & Conzelmann, 2011). The novel elements of the counseling approach were the trial exercise and sport sessions, accompanied by reflective conversations.

In the current research literature, the implementation of interventions is rarely reported in detail (Peters et al., 2014). However, because implementation is important

for the dissemination of the counseling approach, it has been addressed in this study. Evaluation of the implementation showed that overall participants were satisfied with the intervention and the single counseling elements were found to be useful. Their diverse practical experiences, combined with discussions with the counselor immediately afterwards, were especially helpful. This result is in line with Schön's (1983) reflection-on-action theory. Schön assumes that thinking back on what has been done in a particular situation and critically evaluating the beliefs, ideas, and feelings that framed the action, generally promote learning. Therefore, one can suppose that it was above all the aforementioned combination of counseling elements 3 and 4 which fostered participants' motivational competence and self-concordance. Initial analyses of a randomized controlled trial over 14 weeks with 129 adults partially confirm this assumption (Schorno et al., 2020).

Implementation fidelity ranged from good (e.g., shared decision about a change plan) to very good (e.g., assessment of past and current exercise and sport behavior). The following pattern of results became apparent: The more open the conversation, the more it allowed participants to get involved (e.g., by answering open questions). However, this also made it more difficult for counselors to follow the procedure and discussion structure as planned. The semistructured counseling protocol was likely to be crucial for a highly accurate implementation (Hébert et al., 2012). Counselors thus had a conversation structure, which gave them a certain level of confidence.

Overall, the findings of this study highlighted the fact that the COMET approach was implemented successfully in nonclinical settings. For its implementation in other settings, the following adaptations are worth considering: A first variation might be to integrate existing exercise and sport classes instead of creating specific trial sessions. This procedure could be suitable for institutions such as fitness centers, rehabilitation facilities, or communities, which often already have a wide range of exercise and sport offers, but do not combine them with individual counseling. A second variation could be to assess exercise and sport experiences beforehand in everyday life (e.g., by smartphone), and use the individual's results in the one-to-one conversation with the counselor. A further possibility would be to encourage participants to reflect on their exercise and sport experiences in a more general manner and without data (e.g., by asking what activity type have given them pleasure in the past). With all three of these variations, the basic idea of the counseling would remain, with the advantage of using available structures, which in turn, would save financial and personnel resources. However, a disadvantage could be that the reflective conversation with the counselors would not be based on diverse exercise and sport experiences, as is the case with specially designed trial sessions.

Limitations

Although the results of this implementation study ranged from satisfactory to good, there were some limitations: Firstly, one should keep in mind that the procedure and sample characteristics of the pilot and main studies differed, which may have influenced the findings. Participants in the pilot study had to rate satisfaction on paper immediately after the counseling session, whereas those in the main study did so online a few weeks later. Furthermore, participants in the pilot study were more active and less likely to be overweight. It is striking that this group evaluated the intervention overall more positively than the less active group in the main study. Secondly, the counseling was based on a wide range of motives and goals (Lehnert et al., 2011; Schmid et al., 2018); however, risk and challenge, which might be particularly important for young adults, were not addressed (Gut et al., 2019). Future studies should consider such age-specific motives and goals. Thirdly, interviews were conducted with only seven participants. These were specifically selected because, being less active, they belonged to the counseling target group. However, one needs to keep in mind that the previously presented justifications for the helpfulness of single counseling elements (research question 3) might not be representative of all participants. Finally, this study was limited in that we did not evaluate the acceptability of the telephone booster session (counseling element 6). And yet, this follow-up contact seems to be particularly important for providing ongoing assistance and adjusting the intended activity types as needed (Whitlock et al., 2002). Further studies should therefore examine how the telephone conversations are perceived by participants.

A relevant step for future studies would be to optimize counselor training. At 10 sessions of 90 minutes, it was relatively time-consuming. It should therefore be investigated whether shortened training would lead to comparably accurate implementation. Further research is also needed to identify factors influencing satisfaction with the counseling. It can be speculated that satisfaction is linked to characteristics of the clients (e.g., their activity level), the counselors (e.g., their empathy or experience), and the setting. In addition, it would be interesting to investigate how aspects of implementation (e.g., quality or satisfaction) influence the effectiveness of the counseling. Finally, future research could take a closer look at the exercise and sport sessions. For example, it should be checked whether the targeted incentives were actually perceived (see Table 3), or whether the activities need to be slightly adapted.

Conclusion

To conclude, this study showed that the COMET approach was accepted and faithfully implemented in a nonclinical setting. It revealed that participants appreciated the combination of gaining experience in various exercise and sport activities, and reflecting on them in a one-to-one conversation with a counselor. Further research could examine the implementation of this counseling approach in different settings.

Electronic Supplementary Material

The electronic supplementary material is available with the online version of the article at https://doi.org/10.1026/1612-5010/a000309

ESM 1. Figure-oriented stress regulators.
ESM 2. Feedback of exercise and sport experiences.
ESM 3. Description of the counsellor training course.
ESM 4. Description of the interview participants.

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Acknowledgements

This work was supported in part by the University Research Priority Program Dynamics of Healthy Aging of the University of Zürich (Dr. Christina Röcke and Dr. Alexander Seifert). They provided smartphones, which were used during the exercise and sport sessions. Furthermore, we thank Prof. Thomas Messner (DHBW Lörrach) for his feedback during the first development phase of the counseling approach.

Conflict of Interests

The authors have declared that no competing interests exist.

Funding

This research was financially supported by the health insurance company Atupri.

Julia Schmid
Institute of Sport Science
University of Bern
Bremgartenstrasse 145
3012 Bern
Switzerland
julia.schmid@ispw.unibe.ch

Anhang B: Beitrag 2

Schorno, N., Sudeck, G., Gut, V., Conzelmann, A., & Schmid, J. (2021). Choosing an activity that suits: development and validation of a questionnaire on motivational competence in exercise and sport. *German Journal of Exercise and Sport Research*, *51*(1), 71–78. https://10.1007/s12662-020-00698-z

Ger J Exerc Sport Res 2021 · 51:71–78
https://doi.org/10.1007/s12662-020-00698-z
Received: 26 June 2020
Accepted: 8 December 2020
Published online: 5 January 2021

Nina Schorno[1] · Gorden Sudeck[2] · Vanessa Gut[1] · Achim Conzelmann[1] · Julia Schmid[1]

[1] Institute of Sport Science, University of Bern, Bern, Switzerland
[2] Institute of Sport Science, University of Tübingen, Tübingen, Germany

Choosing an activity that suits: development and validation of a questionnaire on motivational competence in exercise and sport

Supplementary Information

The online version of this article (https://doi.org/10.1007/s12662-020-00698-z) contains supplementary material, which is available to authorized users.

Introduction

When inactive people (re-)start with exercise and sport activities, they are often advised to choose an activity they enjoy doing (American College of Sports Medicine, 2018). The underlying assumption is that an exercise and sport activity which suits one's preferences and, therefore, provides pleasure, is more likely to be maintained (Klusmann, Musculus, Sproesser, & Renner, 2016; Sudeck & Conzelmann, 2011). Maintaining the activity, in turn, is important to achieve various biopsychosocial health benefits, such as a reduced risk of obesity, cancer, cardiovascular disease, mental health conditions, and increased well-being and self-esteem (Eime, Young, Harvey, Charity, & Payne, 2013; Penedo & Dahn, 2005; Reiner, Niermann, Jekauc, & Woll, 2013; Warburton & Bredin, 2017).

However, finding the preferred exercise and sport activity is not a trivial matter. This is partly due to the wide variety of different possibilities and partly because it cannot be assumed that preferences, especially for inactive people, are known. Rather, a successful search necessitates so-called motivational competence. Rheinberg and Engeser (2010, p. 532) define motivational competence as "a person's ability to reconcile current and future situations with his or her activity preferences such that he or she can function effectively, without the need for permanent volitional control". Namely, motivational competence consists of three different components (Rheinberg, 2002; Rheinberg & Engeser, 2010, 2018; Rheinberg & Vollmeyer, 2018):

(1) It is important for people to know their own motives. Explicit motives can be defined as self-attributed needs and conscious goals (Heckhausen & Heckhausen, 2018), in exercise and sport this indicates that a person is aware of what is important for him/her when active. For example, they may be looking to improve fitness, to be in contact with other people, or to reduce stress (Lehnert, Sudeck, & Conzelmann, 2011). (2) It is also important to correctly assess situations in terms of their incentives. This implies a person knows what to expect in specific exercise and sport activities. For instance, when fit boxing, you can experience how the heart is pumping and how you get out of breath. As a team member in a game-oriented sport activity, you can spend time with other people. Or while doing yoga, you can look inward and relax. (3) And finally, it is important to not only set your goals, but also manage your situation appropriately: this helps you realise your behaviour and ultimately result in joyful and efficient activity. Again when applying this to exercise and sport, the person is able to self-determinedly choose an activity that corresponds to their own preferences or to arrange and realise the activity accordingly (e.g. jogging outdoors instead of on the treadmill to reduce stress).

In general, the term *competence* can be embedded in different competence approaches. In the present paper, a functional–pragmatic approach of competence is assumed (Klieme, Hartig, & Rauch, 2008). Competencies should be operationalised in a specific context (Klieme et al., 2008; Koeppen, Hartig, Klieme, & Leutner, 2008). In the following, motivational competence is seen in the context of maintaining exercise and sport on a long-term and regular basis. The three above-mentioned components of motivational competence are variously demanding and complex (Taxonomy of Educational Objectives; Kratwohl, 2002). Components (1) and (2) refer to the acquisition and reproduction of (domain-specific) knowledge (e.g. knowing one's own preferences in the context of exercise and sport or knowing the incentives of an activity). In contrast, component (3) is rather the application of one's preferences. This means being able to use the knowledge in a concrete situation (e.g. selecting a suitable activity and arranging appropriate situations).

Motivational competence is linked to several psychological constructs. For one, motivational competence is connected with self-concordance (Sheldon & Elliot, 1999), which is defined as the degree to which a chosen goal repre-

sents one's own interests and values. Self-concordance represents a continuum ranging from a person's intrinsic motivation mode, where the exercise and sport activity is inherently interesting, to an external motivation mode, where the person wants to be active owing to external pressure or positive consequences (Sheldon, 2009; Sheldon & Elliot, 1999). Research shows that intrinsic and identified motivation are positively associated with regular exercise and sport behaviour, whereas introjected and extrinsic motivation are mainly unrelated with behaviour (Teixeira, Carraca, Markland, Silva, & Ryan, 2012). Both motivational competence and self-concordance involve one's personal interests. For both constructs, it is assumed that experiencing an activity as satisfying is important for participating long-term in exercise and sport (Rheinberg & Engeser, 2018; Teixeira et al., 2012). However, the two constructs are different in that self-concordance describes the quality of a more or less self-concordant goal, whereas motivational competence describes the knowledge and abilities needed to create conditions to pursue goals efficiently and joyfully.

In addition, motivational competence is closely linked to physical activity-related health competence (PAHCO; Carl, Sudeck, & Pfeifer, 2020; Schmid, Haible, & Sudeck, 2020; Sudeck & Pfeifer, 2016). PAHCO refers to the competencies required to lead a healthy, physically active lifestyle. Of particular interest for the present study is physical activity(PA)-specific self-regulation. It contains the motivational and volitional basis for regular PA. Thereby motivation is relevant for creating intentions, whereas volition is essential for pursuing intentions (Heckhausen & Heckhausen, 2018). On the volitional side, self-control contains strategies to develop action and coping plans (Gollwitzer & Oettingen, 2016; Gollwitzer & Sheeran, 2006) and to suppress conflicting interests (Englert, 2016). PA-specific self-control is a key element for translating intentions into actual PA behaviour and building habits (Hagger, 2019). This volitional aspect as a subfacet of PA-specific self-regulation has already been empirically investigated (e.g. Carl, Sudeck, Schultz, & Pfeifer, 2020; Lenartz, 2012; Sudeck & Pfeifer, 2016). For the motivational side of PA-specific self-regulation within the PAHCO approach, operationalisation is missing. This is where the construct of motivational competence could fill the gap.

Purpose of the present investigation

In previous research motivational competence was viewed as a general psychological construct for explaining human behaviour (Rheinberg, 2002; Rheinberg & Engeser, 2010, 2018). However, it became clear that due to the various goals, the variety of activities and the different ways of arranging an activity, motivational competence might be important to maintain exercise and sport. Therefore, it could be beneficial to promote motivational competence by designing interventions and investigating their effectiveness. To do so, a well-validated questionnaire is needed. Hence, the overarching goal of this article is to develop and validate a theoretically underpinned and economical self-assessment scale in German for motivational competence. For this purpose, the following three research questions were posed:

1. Which items, that is, statements, are the most appropriate to measure motivational competence? To answer this question, items were developed based on theoretical considerations and communicative validation. Following this, factorial validity was checked with two independent samples.
2. How reliable is the scale? Factor, indicator and test–retest reliability were analysed.
3. How valid is the scale? To test further construct validity, we analysed how motivational competence is related to self-concordance. According to Sheldon and Elliot (1999), it can be hypothesised that motivational competence is positively related to self-concordant goals, such as intrinsic and identified motivation modes, whereas with non-self-concordant goals, such as introjected and extrinsic motivation mode, it is less or not at all related. To test criterion validity, we analysed how motivational competence is associated with PA-specific self-control and with the volume of exercise and sport. It can be assumed theoretically that motivational competence and PA-specific self-control are positively associated (Sudeck & Pfeifer, 2016). Furthermore, both constructs should make an independent contribution to explain the volume of exercise and sport, whereas PA-specific self-control may be more closely related, since it refers to the regularity of behaviour.

Methods

Item development

First, twelve items were developed in accordance with the construct of motivational competence (Rheinberg, 2002; Rheinberg & Engeser, 2010, 2018; Rheinberg & Vollmeyer, 2018). All Rheinberg and Vollmeyer's components (2018) were covered with at least one item. In addition, the items contained knowledge and application from Kratwohl's Taxonomy of Educational Objectives (2002) (see Electronic Supplementary Material 1). These initial items were developed by a focus group (Barbour, 2007) consisting of four sport scientists and one psychologist. These experts reviewed the items twice (Worthington & Whittaker, 2006).

Second, to test comprehensibility, five qualitative interviews with adults ($M_{age} = 42.00$, three women, two men) with the think-aloud technique (Presser et al., 2004) were conducted. This revealed that some items were problematic because they contained terms that were either incomprehensible or ambiguous (e.g. characterise, interests, or experiences). Consequently, these items[1]

[1] For example, the item "I can estimate very well what to expect in various exercise and sport activities" cannot be answered by inactive people, because they may not have previous experience. In the item "I find it very easy to estimate what characterises different exercise and sports activities" the expression *characterises* was interpreted differently.

were removed. Finally, seven items (see Electronic Supplementary Material 1) were selected for testing in the empirical study. Participants evaluated these seven items on a 5-point Likert scale ranging from *does not apply at all* (1) to *applies exactly* (5).

Samples and data collection

The sample for this study was collected in two different ways. Firstly, participants were recruited via a health insurance's online (newsletter, posts in social media) and print media (magazine, flyer, media release). In all, 466 adults followed the request and filled out the online questionnaire. Secondly, participants were recruited via service companies' health management platforms. As a result, 201 adults completed the online or paper–pencil questionnaire. A subsample of 76 people accomplished the questionnaire again two weeks after and thus were used to check test–retest reliability. In total the overall sample contains 667 people (for details see **Table 1**).

Measures for validation

Sport- and exercise-related self-concordance

Self-concordance was assessed using the self-concordance of the sport- and exercise-related goals-scale (Seelig & Fuchs, 2006). This well-validated scale measures four modes of motivation (intrinsic, identified, introjected and extrinsic) with 12 items. Based on the sentence "I intend to exercise regularly within the next few weeks and months because …" statements such as, "it's just fun for me" (intrinsic) or "other people tell me to be physically active" (extrinsic) had to be evaluated. Participants answered the statements on a 6-point Likert scale ranging from *does not apply at all* (1) to *applies exactly* (6). Cronbach's α was acceptable to good ($0.75 \leq \alpha \geq 0.87$).

PA-specific self-control

PA-specific self-control was measured with the 3-item scale developed and validated by Sudeck and Pfeifer (2016). Participants had to rate statements such as "when I decide to exercise more, I am very disciplined in implementing this plan" on a 5-point Likert scale ranging from *does not apply at all* (1) to *applies exactly* (5). Cronbach's α was good ($\alpha = 0.88$).

Exercise and sport behaviour

Exercise and sport behaviour was recorded with the Physical Activity, Exercise, and Sport Questionnaire (Fuchs, Klaperski, Gerber, & Seelig, 2015). Participants could indicate up to three different activities. Furthermore, they specified how often and how long they had performed each activity in the four weeks before data collection. A weekly volume of exercise and sport activity was calculated, based on frequency and duration of each specified activity given.

Data preparation and analysis

The entire sample was checked for multivariate outliers using Mahalanobis distance (χ^2 at $p < 0.001$) (Tabachnick & Fidell, 2013). A total of 22 individuals were removed from the data set. Missing values (0.62%) were estimated with the full information maximum likelihood procedure (Little & Rubin, 2020). For the seven items of motivational competence, the percentage of missing value was 0.04%, which corresponds to two missing values. The data were analyzed with MPlus Version 8.4 (Muthén & Muthén, 2017).

Factorial validity

To examine factorial structure (research question 1), the total sample of 645 was randomly split half into halves: sample A and sample B (see Electronic Supplementary Material 2). Exploratory structural equation modeling (ESEM) (Asparouhov & Muthén, 2009) with the robust maximum likelihood (MLR) estimator method and target rotation was used to check the initial factor structure of the item pool with sample A. Thereby, only factor loadings with > 0.50 were considered. According to Schermelleh-Engel, Moosbrugger, and Müller (2003), a good and acceptable model fit is given if the comparative fit index (CFI) ≥ 0.97 and ≤ 0.95, the Tucker-Lewis Index (TLI) ≥ 0.97 and ≤ 0.95, the standardised root mean square residual (SRMR) ≤ 0.05 and ≤ 0.10, and the root mean square error of approximation (RMSEA) ≤ 0.05 and ≤ 0.08, respectively. To cross-validate the factorial structure, metric measurement invariance tests across samples A and B were conducted. As a precondition, configural

Abstract

Ger J Exerc Sport Res 2021 · 51:71–78
https://doi.org/10.1007/s12662-020-00698-z

N. Schorno · G. Sudeck · V. Gut · A. Conzelmann · J. Schmid

Choosing an activity that suits: development and validation of a questionnaire on motivational competence in exercise and sport

Abstract

The current study presents the development and validation of a questionnaire on motivational competence in exercise and sport. Motivational competence characterises the self-determined ability to choose a suitable exercise and sport activity. Knowing one's own preferences and what to expect in different activities helps people to make this choice, which, in turn, supports them in maintaining their physical activity (PA) on a long-term and regular basis. The developed items cover the following three components of motivational competence: 1) knowing one's own preferences, 2) knowing what to expect in different exercise and sport activities, and 3) choosing and arranging an exercise and sport activity. Psychometric properties were checked using a sample with $N = 667$ adults ($M_{age} = 42.49$, $SD = 14.71$, 62% female). The final one-dimensional scale consists of four items. Construct validity showed positive relationships to intrinsic and identified motivation modes of self-concordance and conversely no relationship to introjected and low negative to extrinsic motivation. For criterion validity, the structural equation modeling demonstrated that motivational competence and PA-specific self-control are independently and positively associated with exercise and sport behaviour. Overall, the newly developed scale is a psychometrically sound and economical instrument to be used in exercise and sport promotion (e.g. counselling) and research.

Keywords

Scale development · Competence · Motivation · Exploratory structural equation modeling · Physical activity

Table 1 Overview and characteristics of the sample ($n = 667$)

Variables	% or Mean (SD)
Sex	62% female, 38% male
Age	42.49 years (14.71 years)
Level of education	
First-level education (e.g. primary school)	2%
Second-level education (e.g. apprenticeship)	41%
Third-level education (e.g. university)	55%
Others	2%
Weekly volume of exercise and sport (last 4 weeks)	130.02 min (212.65 min)
Inactive	31%
1–74 min	11%
≥ 75 min	58%

measurement invariance was examined, whereby a separate ESEM was conducted for each sample. According to Chen (2007), measurement invariance is given if $\Delta CFI \leq 0.010$ and $\Delta RMSEA \leq 0.015$.

Reliability

Composite reliability (CR) (Bagozzi & Yi, 2012) and the average variance extracted (AVE) (Fornell & Larcker, 1981) were calculated to determine the reliability of the factors (research question 2). In addition, Cronbach's α was calculated. To estimate the reliability of the indicators, squared multiple correlations (SMC) were computed. CR ≥ 0.70, AVE ≥ 0.50, Cronbach's $\alpha \geq 0.80$, and SMC ≥ 0.40 were used as cut-offs for good reliabilities. To consider test-retest reliability (r_{tt}) in the subsample, the Pearson coefficient was used over a period of 14 days ($M = 14.45$ days, $SD = 1.53$). If r_{tt} is ≥ 0.70, it is satisfactory.

Construct validity and criterion validity

To assess construct and criterion validity (research question 3), two different analyses were made. Firstly, based on a structural equation modeling, latent correlation coefficients between motivational competence and intrinsic, identified, introjected, and extrinsic modes of motivation of self-concordance (Seelig & Fuchs, 2006) were calculated. According to Cohen (1988), effect sizes with 0.10 were classified as small, 0.30 as medium and 0.50 as large. The level of significance was set at $p < 0.05$, except when testing the null hypotheses, where it was set at $p < 0.10$. Secondly, a structural equation modeling with motivational competence and PA-specific self-control was conducted to see how these constructs are associated with the weekly volume of exercise and sport. The same cut-offs for a good and acceptable model fit apply as listed above. Significance level was set at $p < 0.05$. In addition, the Fornell-Larcker criterion (Fornell & Larcker, 1981) for motivational competence and PA-specific self-control was calculated, which is given when AVE of a factor is greater than the square variance between the factors.

Results

Factorial validity

To start, one- to three-factor models were examined. However, when two and three factors were targeted, no clearly distinguishable factor structure (e.g. high cross-loadings) can be identified. That is why the following analysis refers to a one-factor solution only. We started with a 7-item model in sample A. There it became clear that MC6 should be dropped out due to relatively low factor loading, worse kurtosis and low item difficulty (**Table 2**).

From a statistical perspective, the remaining items can be classified as comparably good when considering the 6-item model. Nevertheless, two more items were deleted because of the economy of the measurement tool and based on theoretical and content-related assumptions. Thus, MC5 was removed, since MC5 is quite similar in content to MC3 (see Electronic Supplementary Material 1). Both items are about people knowing their own preferences and thus establishing a fit with a suitable exercise and sport activity. Despite this similarity, MC3 covers the competence category *knowledge* (i.e. "I know exactly …") more appropriately (Kratwohl, 2002). Finally, MC7 was excluded. Both, MC7 and MC4 aim at identifying different incentives, whereby the wording of MC7 "… what to expect in various exercise and sport activities" is broader than the wording of MC4 "… what characterises different exercise and sport activities". Thus, MC4 is closer in content to the original theoretical construct. The final 4-item version displayed the best model fit (CFI = 1.000, SRMR = 0.006, TLI = 1.000, and RMSEA = 0.000) in comparison to the other models (see Electronic Supplementary Material 3). In addition, all items had satisfactory high factor loadings (**Table 2**). Only the factor loading of MC4 was slightly lower. It should be noted that the 3-item model did not cover the whole facet of motivational competence, which is why it was not pursued in detail.

Furthermore, configural measurement invariance was independently demonstrated in sample A and sample B (**Table 3**). In addition, both samples combined met the cut-off values ($\Delta CFI \leq 0.010$ and $\Delta RMSEA \leq 0.015$) for metric measurement invariance.

Therefore, the metric measurement invariance of the final 4-item model means that equal factor loadings in these two samples can be assumed and that statements about correlations with other constructs are allowed. Thus, the two samples were merged for further analysis.

Reliability

The reliability tests showed satisfactory results. All coefficients exceed the cut-off values with CR = 0.86, Cronbach's $\alpha = 0.86$ and AVE = 0.62. All items showed good values for SMC (0.49–0.69). In addition, test–retest reliability (r_{tt}) over a period of two weeks displayed a positive correlation of $r_{tt} = 0.79$ ($p < 0.001$, $n = 76$), which is satisfactory.

Construct validity and criterion validity

As expected, motivational competence correlated with the constructs included to test the scale's construct validity. A large positive correlation was found for the intrinsic motivation mode ($r = 0.63$, $p < 0.001$), whereas a medium-sized cor-

Table 2 Factor loadings and descriptive statistics of samples A and B

Items	Factor loadings								Descriptive statistics of samples A and B							
	7-item model		6-item model		5-item model		4-item model		*M*		*SD*		Skewness		Kurtosis	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
MC1	0.84	0.81	0.84	0.81	0.84	0.82	0.83	0.82	3.67	3.78	1.06	1.01	−0.67	−0.70	−0.17	−0.01
MC2	0.79	0.80	0.78	0.78	0.78	0.79	0.80	0.82	3.90	3.89	0.93	0.91	−0.70	−0.73	0.10	0.23
MC3	0.81	0.77	0.80	0.77	0.81	0.76	0.83	0.79	3.74	3.80	1.04	0.96	−0.52	−0.65	−0.55	0.14
MC4	0.73	0.73	0.73	0.75	0.73	0.74	0.70	0.68	3.20	3.28	1.01	0.99	−0.22	−0.09	−0.56	−0.54
MC5	0.78	0.72	0.79	0.72	–	–	–	–	3.94	3.87	1.03	0.98	−0.85	−0.73	−0.01	0.08
MC6	0.57	0.63	–	–	–	–	–	–	4.10	4.11	0.78	0.79	−0.85	−0.90	1.18	1.34
MC7	0.76	0.79	0.77	0.79	0.76	0.79	–	–	3.42	3.50	0.90	0.93	−0.31	−0.41	−0.08	−0.05

A sample A ($n = 323$), *B* sample B ($n = 322$)

Table 3 Measurement invariance of the final 4-item model

	MLR-χ^2	df	CFI	TLI	SRMR	RMSEA [90% CI]	Δ CFI	Δ RMSEA
Sample A ($n = 323$)	1.05	2	1.000	1.000	0.006	0.000 [0.000–0.091]	–	–
Sample B ($n = 322$)	2.45	2	0.999	0.997	0.010	0.027 [0.000–0.117]	–	–
Configural invariance	3.48	4	1.000	1.000	0.008	0.000 [0.000–0.079]	–	–
Metric invariance	5.11	7	1.000	1.000	0.026	0.000 [0.000–0.056]	0.000	0.000

MLR-χ^2 robust maximum likelihood estimation, *CFI* comparative fit index, *TLI* Tucker–Lewis Index, *SRMR* standardised root mean square residual, *RMSEA* root mean square error of approximation, *90% CI* confidence interval for RMSEA

relation was manifested for the identified motivation mode ($r = 0.44$, $p < 0.001$). Furthermore, as hypothesised, no correlation with the introjected motivation mode ($r = -0.00$, $p = 0.970$) was found, whereas the extrinsic motivation showed a small and negative correlation ($r = -0.11$, $p = 0.062$).

For criterion validity, both factors—motivational competence and PA-specific self-control—met the Fornell–Larcker criterion ($AVE_{MC} = 0.62 > (0.65)^2 = 0.42$; $AVE_{SC} = 0.71 > (0.65)^2 = 0.42$). In addition, the structural equation model fitted the data well (CFI = 0.999, SRMR = 0.010, TLI = 0.998, and RMSEA = 0.014). Motivational competence ($\beta = 0.13$, $p = 0.008$) and PA-specific self-control ($\beta = 0.48$, $p > 0.001$) were positively associated with the weekly volume of exercise and sport (**Fig. 1**). The model explains 33% of the variance of weekly volume of exercise and sport. Furthermore, a positive correlation between motivational competence and PA-specific self-control ($\beta = 0.65$, $p > 0.001$) occurred.

Discussion

The aim of this current study was to develop and validate a German self-assessment scale to measure motivational competence. We have shown that motivational competence can be measured on a one-dimensional scale. This scale covers three components by Rheinberg and Vollmeyer (2018), namely, (1) awareness of one's own preferences, (2) knowledge of the incentives of various exercise and sports activities, and (3) corresponding selection and arrangement of a suitable exercise and sport activity.

This newly developed instrument on motivational competence meets the quality criteria for psychometric properties. The analysis displays favourable values for the reliability of the factor, the indicators and the test–retest. Likewise, the positive relationships to intrinsic and identified motivation of self-concordance (Seelig & Fuchs, 2006) indicate good validity. The results may assume that people with a high level of motivational competence do exercise and sport activities which are rather congruent to their motives. In addition, they need less volitional control for execution (Rheinberg, 2002; Rheinberg & Engeser, 2018). This increases the chance of engaging intentionally in motive-fitting situations. Conversely, no relationship to introjected and a low negative relationship to extrinsic motivation is revealed, which underlines the statement above. The results of the structural equation model provide additional evidence for validity. Both PA-specific self-control and motivational competence are independently associated with the volume of exercise and sport, whereby the association with PA-specific self-control is strongest. These findings are consistent with previous research (Sniehotta, Scholz, & Schwarzer, 2005), where both motivation and volition are related to exercise and sport behaviour; however the correlation to volition is comparably higher. To sum up, the theoretical expectations and validation hypotheses posed have been confirmed and a satisfactory validity is indicated.

The present findings support the two-sidedness of PA-specific self-regulation, which is the basis for regular PA. Motivational competence as the motivational side of PA-specific self-regulation represents the self-determined ability to choose a suitable exercise and sport activity and arrange it efficiently and joyfully. In contrast, self-control—as the volitional side—represents the planning of this exercise and sport activity. Thus, motivational competence and PA-specific self-control are two substantial and discriminant determinants of exercise and sport behaviour which complement

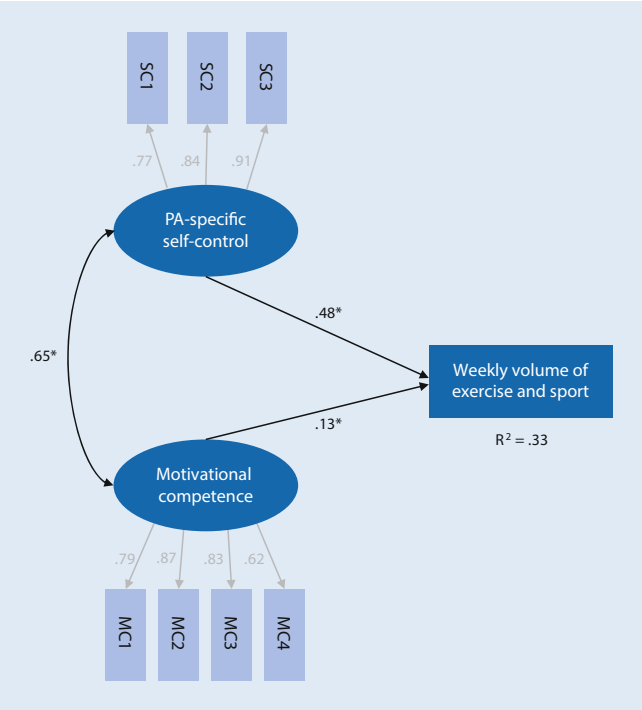

Fig. 1 ◀ Structural equation modeling for the association between motivational competence, PA-specific self-control and weekly volume of exercise and sport ($N = 645$) (Reported coefficients and factor loadings are standardised. For more clarity, cross-loadings < 0.20 are not displayed. *MC* motivational competence, *SC* PA-specific self-control; $*p < 0.05$)

each other. In the future, how the two constructs interact could be investigated in more detail, for example, whether there is a compensation mechanism as assumed by Rheinberg and Vollmeyer (2018).

Although the questionnaire demonstrates good psychometric properties, four limitations need to be pointed out. The first limitation concerns the one-dimensionality of the scale. This implies that specific changes in a component (e.g. knowing one's own motives) cannot be analysed separately. To its credit, however, a short scale is economical. The second limitation concerns the sample. Due to the absence of a random selection, the representativeness of the sample is slightly limited. Women (62%), people with a higher education (e.g. university degree; 55%), and people with a high activity level (≥ 75 min/week; 58%) are overrepresented, which might influence the results. The third limitation concerns the assessment of exercise and sport behaviour. The volume of exercise and sport was assessed using self-reports. Consequently, it could be that people overestimate themselves in declaring their PA. This potential bias of memory and social desirability must be taken into account (Nigg et al., 2020). Here, the use of an accelerometer would provide objective data of PA. The fourth limitation concerns the study design. The relationships examined in this study are cross-sectional. When it comes to the maintenance of PA, however, longitudinal data are particularly important.

Future research should examine how motivational competence can be promoted. A possible intervention could be in the form of an exercise and sport counselling (Schmid, Conzelmann, & Sudeck, 2013; Schmid, Schorno, Gut, Sudeck, & Conzelmann, in press), in which the three components from motivational competence are addressed. For example, people could become more aware of their preferences (component 1) through the assessment of their motives and the discussion of the individual motive profile (e.g. Sudeck, Lehnert, & Conzelmann, 2011). Various exercise and sport sessions could help people gain experiences and understand the incentives of different activities (component 2). Finally, a guided reflection with a counsellor about the experienced activities (e.g. what did you like? Why did you (not) like it?) could help people to find an exercise and sport activity that suits them (component 3). In addition to motivational competence, such a counselling also ideally promotes PA-specific self-control, by planning actions (e.g. how to implement the activity in everyday life) or addressing barrier management, for example. A promotion from motivational and volitional aspects should contribute to the fact that no intention–behaviour gap arises, and thus people are regularly and for a long-term active (Fuchs, Göhner, & Seelig, 2011; Milne, Orbell, & Sheeran, 2002). Such an intervention can be implemented in a non-clinical or clinical setting (e.g. at the end of a rehabilitation program). Future research should investigate the effectiveness of a counselling on motivational competence using a longitudinal design, whereby the newly developed questionnaire may be used to measure the impact. Further studies should additionally examine general factors influencing motivational competence (e.g. implicit associations) and the effect on exercise and sport behaviour (e.g. Brand & Ekkekakis, 2018).

In the present study motivational competence as a general construct was examined in the domain of exercise and sport. Overall, results show that motivational competence is a relevant domain-specific construct that should be given more attention both in research and practice. Furthermore, the questionnaire is a useful tool for the assessment of motivational competence and to check the effectiveness over time, especially for the planning of interventions that promote motivational competence.

Corresponding address

Nina Schorno
Institute of Sport Science,
University of Bern
Bremgartenstrasse 145,
3012 Bern, Switzerland
nina.schorno@ispw.unibe.ch

Funding. This research was supported by the health insurance Atupri. The funder had no role in study design, data collection, data analysis, decision to publish, or preparation of the manuscript.

Funding. Open access funding provided by University of Bern

Compliance with ethical guidelines

Conflict of interest. N. Schorno, G. Sudeck, V. Gut, A. Conzelmann and J. Schmid declare that they have no competing interests.

All procedures performed in studies involving human participants or on human tissue were in accordance with the ethical standards of the institutional and/or national research committee and with the 1975 Helsinki declaration and its later amendments or comparable ethical standards. The Ethics Committee of the Faculty of Human Sciences of the University of Bern's Faculty of Human Science approved the study design and procedures (number: 2018-11-00004). Informed consent was obtained from all individual participants included in the study.

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Anhang C: Beitrag 3

Schorno, N., Gut, V., Conzelmann, A., & Schmid, J. (2021). Effectiveness of individual exercise and sport counseling based on motives and goals: A randomized controlled trial of the COMET approach [Manuscript submitted for publication]. Institute of Sport Science, University of Bern.

Effectiveness of individual exercise and sport counseling based on motives and goals: A randomized controlled trial of the COMET approach

Nina Schorno[1], Vanessa Gut[1], Achim Conzelmann[1], and Julia Schmid[1]

[1]Institute of Sport Science, University of Bern, Bern, Switzerland

Address correspondence to Nina Schorno, Institute of Sport Science, University of Bern, Bremgartenstrasse 145, 3012 Bern, Switzerland, E-Mail: nina.schorno@ispw.unibe.ch

Competing Interests

The author(s) has/have declared that no competing interests exist.

Abstract

This study tests the effectiveness of individual exercise and sport counseling in a non-clinical setting. The COMET approach focuses on individual motives and goals and aims to identify suitable activities. Participants experience different exercise and sport activities on site and reflect on them with a counselor, who applies motivational interviewing. A stratified randomized controlled design with 129 people was used. The intervention group took part in a counseling event, which included feedback on motives and goals, trial exercise and sport sessions, and structured reflection. Four weeks later, members of the group got a telephone booster. The control group received minimal intervention. Results show that the counseling promoted motivational competence ($\eta^2 = .16$), PA-specific self-control ($\eta^2 = .08$), and the weekly volume of exercise and sport ($\eta^2 = .15$), whereas it did not influence self-concordance. Further studies can investigate whether the COMET approach is also effective in other settings.

Keywords: preferences; needs; motivation; volition; physical activity; motivational interviewing

Introduction

The World Health Organization (WHO; 2018) guides nations to implement actions that support people to become more physically active. The overreaching goal is that many benefit from the health effects of physical activity (PA), for example, the prevention of obesity, cancer, coronary heart disease, or mental health conditions (McTiernan et al., 2019; Reiner et al., 2013). In the global action plan on PA, the WHO (2018) highlights individual counseling as one important promotion strategy.

Different counseling concepts on PA are available (for an overview see Supplement 1). While almost all of these concepts include behavior change techniques (BCT; Michie et al., 2013), such as developing action and coping plans, which are effective in the promotion of exercise and sport behavior (Bélanger-Gravel et al., 2013), the topic of individual preferences has received less consideration. The majority of the counseling concepts we found that take preferences into account do so rather marginally (Chemtob et al., 2019; Fortier et al., 2011; Fuchs et al., 2011; Kolt et al., 2007). For instance, in the study by Fuchs et al. (2011), individuals had to check on a worksheet whether a planned activity corresponds to their interests. This topic, however, was not explored further. Two counseling concepts we found do focus more extensively on preferences (Chemtob et al., 2019; Fortier et al., 2011). For instance, in the study by Fortier et al. (2011), counselors recorded each individual's preferences and discussed potentially suitable exercise and sport activities with them. However, participants' experiences were limited to the counseling only, without the opportunity to try out any PA and reflect on it in the counseling. Yet, it is precisely this interweaving of practical experience and reflection in terms of time and content that we propose has the potential to promote an individual's learning (Schön, 1983).

The fact that preferences are not thematised more intensively in existing counseling concepts is surprising, as the literature highlights the importance of addressing preferences in PA promotion (Whitlock et al., 2002; World Health Organization, 2018). It is (implicitly) assumed that people are more likely to maintain an activity for a longer period of time if they perceive it as suitable and pleasurable. Empirical studies do, in fact, confirm this assumption (Asztalos et al., 2012; Klusmann et al., 2016; Schmid et al., 2021; Sudeck & Conzelmann, 2011).

To fill the aformentioned gap, Schmid et al. (2020) developed the COMET approach (**CO**unseling based on **M**otives and goals in **E**xercise and spor**T)**, which considers an individual's preferences comprehensively and systematically. It aims to identify suitable types of activities for these individuals by standardized assessing and reporting back their motives and goals, giving them diverse exercise and sport experiences and finally by taking the time to reflect on them in a structured way immediately after. The COMET approach focuses on exercise and sport, two similar subsets of PA. Both are planned, structured, and performed during leisure time (Strath et al., 2013). Exercise and sport activities are very diverse. Consequently, preferences may play a particularly significant role here.

A recent implementation study revealed that the COMET approach can be successfully applied in a non-clinical setting (Schmid et al., 2020). Participants (overall sample[1]: N = 94, M_{age} = 40.65, 69% women, 66% 0-75 min exercise and sport/week) were satisfied with the counseling overall, indicating a good acceptability of the approach. They also reported that the counseling helped them notice their preferences. Furthermore, implementation fidelity was good, meaning that counselors were able to follow closely the semi-standardized protocol (see Schmid et al., 2020 for details about factors that influence implementation fidelity). To complement existing research, the present study aims to test the effectiveness of the COMET approach using a randomized controlled trial.

The COMET approach seeks to promote motivation, volition, and exercise and sport behavior. In terms of motivation, it focuses on *motivational competence* (Rheinberg & Engeser, 2018; Rheinberg & Vollmeyer, 2018), which refers to "a person's ability to reconcile current and future situations with their activity preferences" (Rheinberg & Engeser, 2010, p. 532). In the context of exercise and sport, motivational competence consists of three different components: 1) A person is aware of their own motives and goals. (Explicit) motives are defined as self-attributed needs and conscious goals (Heckhausen & Heckhausen, 2018). This indicates that a person knows what is important for him/her when active. For example, one is looking to be in contact with other people, or want to reduce stress. 2) A person is able to correctly evaluate activities in terms of their incentives. This implies that an individual knows what to expect in specific exercise and sport activities. For example, as a member of

[1] A subsample of the study by Schmid et al. (2020) is identical to the intervention group of the present study.

a basketball team, one can spend time with other people or one can relax while hiking. 3) A person can choose an activity that corresponds to their motives and goals, or arrange and realize same accordingly. For example, one can go jogging outdoors instead of on the treadmill to reduce stress (Rheinberg & Engeser, 2018; Rheinberg & Vollmeyer, 2018; Schorno et al., 2021). Motivational competence is positively associated with exercise and sport behavior (Schorno et al., 2021). Furthermore, the counseling addresses *self-concordance* (Sheldon & Elliot, 1999), which is defined as how well a chosen goal matches one's own interests and values. Self-concordance represents a continuum and consists of four motivation modes: In an intrinsic motivation mode, a person wants to be active because it gives pleasure and is perceived as inherently interesting. In an identified motivation mode, a person wants to be active and shares a sense of choice and belief that exercising or doing sport lead to important outcomes. In an introjected motivation mode, a person wants to be active to avoid internally-imposed anxiety and guilt. And finally, in the extrinsic motivation mode, a person wants to be active because of a positive consequence or external pressure (Sheldon, 2009; Sheldon & Elliot, 1999). Promoting the intrinsic and the identified motivation modes is essential because these modes are positively related to exercise and sport behavior (Teixeira et al., 2012). In terms of volition, the COMET approach focuses on *physical activity(PA)-specific self-control* (Sudeck & Pfeifer, 2016), which refers to the ability to transfer intentions into actual behavior (Gollwitzer & Oettingen, 2016; Gollwitzer & Sheeran, 2006). PA-specific self-control includes cognitive strategies, such as developing action and coping plans (Gollwitzer & Oettingen, 2016; Gollwitzer & Sheeran, 2006). Based on the theoretical considerations and empirical studies presented above, it is assumed that increased motivational competence, self-concordance, and PA-specific self-control all lead to more regular exercise and sport behavior (Bélanger-Gravel et al., 2013; Fuchs et al., 2016; Rheinberg & Engeser, 2010). The COMET approach addresses these four different outcomes, whereof motivational competence, self-concordance, and PA-specific self-control are considered primary outcomes, and exercise and sport volume (min/week) a secondary outcome.

The COMET approach is based on the idea of "the fit", which states that the fit between a person's motives (e.g., social contact) and an activity's incentive (e.g., having the opportunity to socialize with others while doing partner exercises) leads to positive outcomes, such as affective well-being and

maintenance in exercise and sport behavior (van Vianen, 2018). In adulthood, motives and goals in exercise and sport vary greatly inter-individually (Lehnert et al., 2011; Schmid et al., 2018). It is assumed that a person is not motivated by one sole motive and goal, but by several, working simultaneously. Thus, each person has an individual motive and goal profile, illustrating what is important to a person and what is not. Sudeck et al. (2011) identified typical motive and goal profiles (a so-called motive-based type of sport person; see also Lindwall et al., 2016). Empirical studies show that an exercise and sport program which fits an individual's motive and goal profile fosters affective well-being during and after PA (Sudeck & Conzelmann, 2011).

However, a suitable activity should not be simply predetermined, without discussion. In counseling, counselor and participant work together. Therefore, it is not a matter of telling participants what to do, but of jointly searching for suitable activities. Here, motivational interviewing (MI, Miller & Rollnick, 2013) offers a theoretical-practical concept that emphasizes this partnership-based approach in conversations. Thereby, individuals are considered experts about themselves; the motivation to change is elicited from the individual and not imposed from without (Rubak et al., 2005). MI consists of relational techniques, on the one hand, whereby the focus is on the interpersonal style, which encourages people to express or even discover their ideas. It increases their self-awareness and facilitates autonomous decision-making (Gillison et al., 2019; Vansteenkiste & Sheldon, 2006). In the present study, three relational techniques are relevant: asking open-ended questions that cannot be answered with a limited response, making reflective statements by repeating back what a person has said, and finally, making summary statements by pulling everything together. On the other hand, MI consists of content-based techniques, whereby the imparting of knowledge and skills to promote commitment to behavior change is central. Here both, the change plan and the so-called troubleshooting are crucial. The change plan helps to implement activities in everyday life by specifying which activity will be carried out where and when. Troubleshooting identifies potential barriers and defines strategies to overcome. These two content-based techniques have a large overlap with BCT: the change plan is comparable with action planning whereas troubleshooting is comparable with coping planning (Hardcastle et al., 2017; Michie et al., 2013). MI has proven to be an effective method to promote (intrinsic) motivation and exercise and sport behavior (e.g., Gillison et al., 2019; Hardcastle et al., 2008; O'Halloran et al., 2014).

According to this theoretical background, the COMET approach encompasses six counseling elements which are thought to address the above-mentioned outcomes (see Table 1 for an overview).

Insert Table 1 around here

To foster the different components of (a) *motivational competence*, the individual motive and goal profile needs to be assessed and feedback provided (counseling elements 1 and 2). Furthermore, diverse exercise and sport experiences need to be gained to evaluate incentives of different activities (counseling element 3). Based on both, the motive and goal profile and the structured reflection on the exercise and sport experiences, suitable exercise and sport activities may be found (counseling element 4; Rheinberg & Engeser, 2018; Rheinberg & Vollmeyer, 2018; Schorno et al., 2021). To promote (b) *self-concordance*, relational MI techniques need to be used (counseling elements 2, 4, 5 and 6; Hardcastle et al., 2017). To foster (c) *PA-specific self-control*, the content-based MI techniques are relevant. A specific change plan needs to be established (counseling element 5; Bélanger-Gravel et al., 2013; Hardcastle et al., 2017). In addition, troubleshooting needs to be applied (counseling element 6; Hardcastle et al., 2017).

The current study aims to examine the effectiveness of the COMET approach over time. It is hypothesized that participants who undergo the intervention of the COMET approach (intervention group: IG) will show (1) higher motivational competence, (2) higher self-concordance, and (3) higher PA-specific self-control than people who did not participate in the counseling (minimal-intervention control group: MICG). Furthermore, it is expected that the IG will show (4) a larger volume of exercise and sport than the MICG.

Methods

Study Design and Procedure

The present study is based on a stratified randomized controlled design with two groups (see Supplement 2, CONSORT checklist). The stratification was done with three groups based on the habitual exercise and sport volume (inactive, 1-60min, 61-120min) indicated at registration. One month before the start of the study, every participant formed at random and by allocation concealment assigned

to either the IG or the MICG. Together with an independent person, the first author performed randomization, using randomizer.org.

The study lasted 14 weeks (pretest assessment t_1 to follow-up assessment t_3), starting end of May 2019 and finishing end of August 2019. The intervention was delivered in two parts (see Figure 1). The IG took part in a counseling event (consisting of counseling elements 1-5; see Table 1) at the buildings and gym of the Institute of Sport Science at the University of Bern. At the same time, the MICG received information in writing about exercise and sport. One month later, the IG got a telephone call as an intervention "booster" (consisting of counseling element 6; see Table 1), while the MICG got an organizational telephone call. Questionnaires were filled out in both groups at three assessment times (t_1-t_3; see Figure 1): pretest assessment before the start of the intervention (t_1), posttest assessment 4 weeks after the counseling event and before the telephone booster (t_2), and a follow-up-assessment 10 weeks after the telephone booster (t_3). After finishing the follow-up assessment, the MICG received the same counseling as the IG to thank them for their participation. This study was registered with OSF (osf.io/4kw68).

Insert Figure 1 around here

Sample

Adhering to the results of previous studies (e.g., Orrow et al., 2012), the sample size was calculated *a priori* using G*Power (Faul et al., 2007) for repeated measures ANOVA with between factors (power = 0.95, $\alpha = 0.05$, effect size = 0.25, number of groups = 2, repetitions = 3). An approximate total sample size of $n = 142$ is needed. In the aforementioned implementation study (Schmid et al., 2020), there was a dropout of about 10-15%. Since a similar rate could be assumed for the present study, additional people were accordingly included for randomization.

Participants were firstly recruited via a health insurance's online media (newsletter, homepage, social media) and print media (magazine, flyer, media release); secondly, via service companies' health management platforms, and thirdly, with an online advertisement in a newspaper. Recruitment took place from three months before randomization in January to end of April 2019.

All n = 248 registered people filled out a screening questionnaire to assess background variables (e.g., age, gender). Furthermore, the screening included the European Health Interview Survey-Physical Activity Questionnaire (Finger et al., 2015) to assess their habitual exercise and sport per week. People with a current habitual exercise and sport volume of less than 120 minutes per week were eligible to participate in the study. Further inclusion criteria were age - between 20 and 70 years old -, and literacy in German. When people unable to give informed consent or participate in another exercise-related study, they were excluded. Finally, 169 participants were judged to be eligible and randomly allocated to the IG or MICG (see Figure 2).

Several people dropped out of the study. Some signed off within seven days before the start of the study but after randomization (n = 29), giving the following reasons for their withdrawal: a) having to work short-term on the intervention day, b) being on vacation on the intervention day, and c) something unexpected happening in the family (e.g., death of a family member). In addition, n = 10 people did not appear at the counseling event without notice (no shows). Consequently, although they had been randomized, these people (n = 39) had to be excluded from the analysis because there was no data on them at any of the assessment times (t_1-t_3). After this exclusion, the entire analysis was handled according to intention-to-treat (see Figure 2). Participants who dropped out after randomization did not differ significantly from the rest of the sample in terms of age (t[166] = -.293, p = .770), gender (χ^2[1] = .778, p = .378), and habitual exercise and sport per week (t[166] = -.867, p = .387).

Insert Figure 2 around here

All participants signed the written consent form. The Ethics Committee of the Faculty of Human Sciences of the University of Bern's Faculty of Human Science approved the study design and intervention (number: 2018-11-00004).

Exercise and Sport Counseling Intervention

The exercise and sport counseling consisted of six elements. It lasted overall about 3 hours in person. In the following, the single counseling elements are described in more detail (see Schmid et al., 2020). The numbers below correspond to the numbers of the counseling elements in Table 1.

1) In the beginning each participant's current and past exercise and sport behavior was assessed (Fuchs et al., 2015), as were their individual motives and goals in exercise and sport (Lehnert et al., 2011; Schmid et al., 2018). This counseling element took 10 minutes. The collected data was then used to form individual feedback on the motive and goal profile (see specific example in Supplement 3) and the motive-based type of sport person assigned (Sudeck et al., 2011).
2) Counselors explained this data and prompted participants to reflect on it in a one-to-one conversation. For this, counselors asked open-ended questions (e.g., To what extent does this motive and goal profile match your personal impression?) and used reflective statements (e.g., paraphrasing participants' comments). This counseling element took 20 to 25 minutes.
3) Afterwards, participants gained diverse exercise experiences in three trial exercise and sport sessions in groups of 8 to 12 individuals. The six existing groups were balanced in terms of age. Each session lasted 30 minutes, with two 10-minutes breaks in between (110 minutes in total). Sessions were similarly structured (warm-up, main part, cool down) but addressed different incentives (e.g., session A: Figure/Appearance, Fitness, and Health; session B: Contact and Competition/Performance; session C: Aesthetics and Distraction/Catharsis; Lehnert et al., 2011; Schmid et al., 2018; see Supplement 4). Before, during and after each session, participants had to answer short questions on smartphones (e.g., about affective well-being, exercise and sport experiences following motive and goal contents; Lehnert et al., 2011; Schmid et al., 2018).
4) The counseling event continued with a one-to-one conversation with the same counselor as before, who prompted participants to reflect on the incentives of the exercise and sport activities they had just experienced (e.g., Which exercise session did you like the most and which the least? Why?). Furthermore, the counselors and participants looked at the data from the previous smartphone questionnaire and discussed it (e.g., To what extent does the data about affective well-being represent your personal impression?). Based on this shared discussion, they worked together to deduce potentially suitable exercise and sport activities. The final advice was also inspired by the work of Sudeck and Conzelmann (2011), who identified suitable exercise and sport activities for each motive-based type of sport person.

5) Counselors then assisted participants in developing a concrete change plan (e.g., Which activity will I do when, where and how often?). They agreed jointly that participants would implement this change plan in the coming weeks until the telephone call. To round up the counseling event, the counselors gave a summary statement about each of the counseling elements and the jointly-elaborated components contained therein. Counseling elements 4 and 5 took a total of 20 minutes.
6) Four weeks after the counseling event, participants got a telephone call, which served as a booster. Reflecting on the experiences they had made in the meantime was key. The counselors asked participants to what extent they had been able to implement the change plan in their everyday life and what experiences they had made. Depending on the answers, the change plan was adapted jointly. Furthermore, when deemed appropriate, counselors guided participants through the troubleshooting (e.g., identify the barrier: it is raining; look for the strategy to overcome it: I wear my bought rain jacket). This counseling element took 20 minutes.

The intervention was realized by 16 counselors (M_{age} = 25.81 years, SD_{age} = 3.08 years, range: 23-35 years, 56% female, all exercise and sport scientists). They were all educated as counselors in a training course at the University of Bern, which lasted 10 x 90 minutes (for details see Schmid et al., 2020). Counselors were given a handbook explaining the goal and theoretical background of the COMET approach and a semi-standardized counseling protocol (available on request, from the last author), complete with the specific procedure and key sentences of the one-to-one conversations (e.g., open-ended questions).

Minimal Intervention Control

At the time of the counseling event (t_1), participants allocated to the MICG received information about exercise and sport by email. Motives and goals in exercise and sport were described in the email and a change plan to implement activities in everyday life was briefly explained. The content was similar to the IG counseling event but the information was not individualized and there was no face-to-face contact. To keep the conditions of experiment the same for all, the participants received a telephone call with organizational information (e.g., asking if they had any questions about the date and place of the upcoming counseling event). This call happened at the same time as the telephone booster to the IG

participants (t_2). When the study was finished, participants allocated to the MICG were invited to attend the counseling to thank them for their participation.

Outcome Measures

All outcome measures were collected online three times during the study (see Figure 1). Additionally, demographic details were elicited at the pretest assessment (t_1; e.g., education, height, weight).

Motivational competence (MC) was assessed with the 4-item scale developed and validated by Schorno et al. (2021). Statements were rated on a 5-point Likert scale ranging from *does not apply at all* (1) to *applies exactly* (5): for example "I know exactly what is important for me in an exercise and sport activity so that I like it" or "I find it very easy to assess what characterizes different exercise and sport activities". Cronbach's alpha was acceptable to good (t_1: $\alpha = .79$, t_2: $\alpha = .82$, t_3: $\alpha = .88$).

PA-specific self-control (SC) was assessed with the validated 3-item scale by Sudeck and Pfeifer (2016). Statements, such as "If I have planned to exercise, I generally follow through on this plan" were rated on a 5-point Likert scale ranging from *does not apply at all* (1) to *applies exactly* (5). Cronbach's alpha was acceptable to good (t_1: $\alpha = .78$, t_2: $\alpha = .83$, t_3: $\alpha = .83$).

Self-concordance was assessed with the validated self-concordance of the sport- and exercise-related goals-scale (Seelig & Fuchs, 2006). This scale measures the intrinsic, identified, introjected and extrinsic modes of motivation with 12 items. According to the sentence, "I intend to exercise regularly within the next few weeks and months because…." participants rated statements, such as "it's just fun for me" (intrinsic) or "I have good reason to" (identified). The 6-point Likert scale ranged from *does not apply* (1) to *applies exactly* (6). Cronbach's alpha was acceptable to good (intrinsic, t_1: $\alpha = .82$, t_2: $\alpha = .78$, t_3: $\alpha = .76$; identified, t_1: $\alpha = .70$, t_2: $\alpha = .82$, t_3: $\alpha = .80$), questionable to good (introjected, t_1: $\alpha = .62$, t_2: $\alpha = .81$, t_3: $\alpha = .70$; and extrinsic, t_1: $\alpha = .67$, t_2: $\alpha = .84$, t_3: $\alpha = .70$).

Exercise and sport volume was assessed with the Physical Activity, Exercise, and Sport Questionnaire (Fuchs et al., 2015). The correlation found between self-report exercise and sport and aerobic fitness (Fuchs et al., 2015), indicates a satisfactory validity of the questionnaire. Participants reported up to three exercise and sport activities which they had done in the last four weeks. Further,

298 they specified how often and how long each time they had done the activity. Based on frequency and
299 duration, a weekly volume of exercise and sport in minutes was calculated.

300 **Data Preparation and Analyses**

301 Statistical analyses were performed using SPSS 27.0 (SPSS Inc., Chicago, IL, USA). At the
302 beginning, the entire sample was checked for multivariate outliers with Mahalonobis distance (χ^2 at $p <$
303 .001) (Tabachnick & Fidell, 2013). This led to one MICG participant being removed from the dataset.
304 Missing values (4.34%) were estimated using multiple imputation with five datasets (van Ginkel, 2017).
305 Additionally, baseline differences for all outcome variables were checked at pretest using *t*-test.

306 Analyses of ANOVA for repeated measures with the interaction effect (group × time), main effect
307 time, and main effect group with the variables for each outcome were calculated to examine the
308 effectiveness of the intervention. The main analyses focused on the overall intervention effect.
309 Additionally, sensitivity analyses were done with gender and age included as covariates. Partial eta
310 square (η^2) was calculated as an estimation of effect size. In accordance with Cohen (1988), effect sizes
311 lower than .06 were classified as small, .06 to .14 as medium, and higher than .14 as large. Significance
312 level was set at $p < .05$ for all analyses. The results will be reported in accordance with the CONSORT
313 guidelines (Schulz et al., 2010).

314 **Results**

315 Characteristics of the study participants ($N = 129$) show that the final sample consists of 67% women
316 ($n = 86$) and an average of 42.40 years ($SD_{age} = 12.66$, range = 20-67 years). At t_1, 63% of the participants
317 were inactive, 15% exercised or did sport between 1-74 min/week and 22% ≥ 75 min/week (M_{volume} =
318 37.62 min, SD_{volume} = 63.14 min). 56 participants were part of the IG, while 73 people belonged to the
319 MICG. Table 2 shows additional details of the two groups separately before and after the outlier analysis.
320 With regard to the background variables at t_1 (age, gender), there were no differences found between the
321 two study groups.

322 *Insert Table 2 around here*

323 Further, Table 3 gives an overview of the descriptive statistics of the outcome measures for all
324 measuring times. Preliminary analysis showed relatively small descriptive differences in the outcome

measures at pretest with no significant difference ($0.02 < d > 1.98$), except in the identified motivation mode, $t_{ident}(127) = 2.13$, $p = .034$, $d = 3.03$. Overall, the IG showed higher values than the MICG on assessments t_2 and t_3 in motivational competence, PA-specific self-control, intrinsic motivation mode, and weekly volume of exercise and sport.

Insert Table 3 around here

The ANOVA with repeated measures revealed a significant main effect time for motivational competence ($F[2,88] = 24.78$, $p < .001$, $\eta^2 = .36$, $n = 129$), PA-specific self-control ($F[2,104] = 5.72$, $p = .004$, $\eta^2 = .09$, $n = 129$), intrinsic motivation mode ($F[2,36] = 5.99$, $p = .006$, $\eta^2 = .25$, $n = 129$), and the weekly volume of exercise and sport ($F[2,56] = 15.22$, $p < .001$, $\eta^2 = .35$, $n = 129$). A main effect group was found only for the weekly volume of exercise and sport ($F[1,174] = 6.63$, $p = .011$, $\eta^2 = .04$, $n = 129$) (see Table 4).

Insert Table 4 around here

However, to test research hypotheses, interaction effects need to be analyzed. For motivational competence, the ANOVA yielded a large group × time interaction effect ($F[2,115] = 11.02$, $p < .001$, $\eta^2 = .16$, $n = 129$) (see Figure 3a), which supports hypothesis 1. Results show that members of the IG were able to greatly increase their motivational competence after the counseling event. The telephone booster had another positive effect, while the levels of the MICG remained almost the same. Similarly, group × time interaction effect is shown for PA-specific self-control ($F[2,156] = 6.57$, $p = .002$, $\eta^2 = .08$, $n = 129$) (see Figure 3b). However, this effect is classified as medium and supports hypothesis 2. Likewise, the results show that the IG increased their PA-specific self-control over time, even if slightly, while the MICG remained for the most part unchanged. Furthermore, analyses revealed a large group × time interaction effect for the weekly volume of exercise and sport ($F[2,96] = 8.67$, $p < .001$, $\eta^2 = .15$, $n = 129$) (see Figure 3c), which confirms hypothesis 4. Results show that IG participants increased their weekly volume of exercise and sport not only after the counseling event (t_2: 60.67 min/week), but also after the telephone booster (t_3: 119.98 min/week), while those of the MICG remained relatively constant over time (t_2: 46.81 min/week; t_3: 58.34 min/week).

Insert Figure 3 around here

In contrast, no interaction effect was found for any of the motivation modes of self-concordance, such as intrinsic (F[2,67] = 0.39, p = .678, η^2 = .01, n = 129) (see Figure 4a), identified (F[2,125] = 2.64, p = .075, η^2 = .04 n = 129) (see Figure 4b), introjected (F[2,49] = 2.67, p = .080, η^2 = .10, n = 129) (see Figure 4c), and extrinsic (F[2,70] = 0.01, p = .989, η^2 = .00, n = 129) (see Figure 4d). Therefore, hypothesis 3 was rejected.

Insert Figure 4 around here

Sensitivity analysis indicated that the intervention effect on the weekly volume of exercise and sport is affected by gender (F[2,241] = 6.51, p = .002, η^2 = .05). The descriptive details are presented in Supplement 5. However, no other significant intervention effects were influenced by age or gender.

In summary, three of the four research hypotheses posed were confirmed. The results indicate that participants from the IG who underwent the exercise and sport counseling within the COMET approach improved their motivational competence, their PA-specific self-control, and their weekly volume of exercise and sport compared to participants from the MICG. Self-concordance was the only one which could not be improved within the study period. Furthermore, sensitivity analyses showed that the intervention effects found are mostly robust.

Discussion

This present study gives insights into the potential of individual exercise and sport counseling, which focuses on individual preferences and aims to identify suitable exercise and sport activities. Complementary to the existing implementation study (Schmid et al., 2020), the purpose of this research was to test the effectiveness of the COMET approach using a stratified randomized controlled design.

The COMET approach aims to promote motivation, volition, and exercise and sport behavior. Three of the four hypotheses were confirmed. Participants in the IG improved their motivational competence, PA-specific self-control, and the weekly volume of exercise and sport, while participants in the MICG changed little or hardly at all (see Figure 3). Conversely, the hypothesis for self-concordance could not be confirmed.

The effect of intervention on motivational competence was the strongest (η^2 = .16). Thus, counseling elements succeeded in fostering a person's ability to reconcile current and future activities with their

preferences (Rheinberg & Engeser, 2010). Based on the results of the qualitative interviews from Schmid et al. (2020) it can be concluded that the combination of gaining diverse exercise and sport experiences and reflecting on them in a structured way were especially effective.

A medium effect was observed for PA-specific self-control ($\eta^2 = .08$). Obviously, the change plan and the troubleshooting, both of which promote PA-specific self-control, fostered people's ability to transfer their general intentions to get active into actual exercise and sport behavior. This result is in line with other existing studies (e.g., Fischer, Donath et al., 2019; Göhner et al., 2009).

A large effect was also observed for the self-reported weekly volume of exercise and sport ($\eta^2 = .15$). Participants from the IG showed an increase of their weekly volume of exercise and sport from an average of 30 min/week (t_1), to around 120 min/week (t_3). In contrast, the MICG remained relatively constant at around 50 min/week (t_1/t_3). This result pattern suggests that the IG may benefit more from the health effects of exercise and sport than the MICG due to the counseling (McTiernan et al., 2019; Reiner et al., 2013). Compared to other studies (e. g., van Hoecke et al., 2014) based mainly on BCT, a slightly larger effect size for self-reported exercise and sport behavior was found in the present study. In contrast, studies with objectively measured exercise and sport behavior found smaller effects (e.g., Fischer, Kreppke et al., 2019). However, results are in line with existing studies that consider individual preferences to a lager or smaller extent (e.g. Chemtob et al., 2019; Fortier et al., 2011; Fuchs et al., 2011; Kolt et al., 2007).

In contrast to our hypotheses, no effect on self-concordance was observed. Indeed, other intervention studies have shown heterogeneous results: while Göhner et al. (2009) reported intervention effects on intrinsic and identified motivation, Fischer, Donath et al. (2019) showed none. Several reasons could bear out our finding: First, compared to motivational competence, self-concordant modes of motivation are relatively stable over time (Emm-Collison et al., 2020). The present intervention could very well have lacked the intensity (e.g., number of contacts) required to motivate individuals to be intrinsically active. Thus, Wasserkampf and Kleinert (2016) highlight that it has not yet been clarified which time period is the most suitable to obtain a change in self-concordance. It is noteworthy that the studies which were able to achieve an effect had more contacts (e.g., Göhner et al., 2009). A second reason for the absence of effect might be the baseline difference found in the identified motivation mode. Participants

in the IG reported higher identified motivation already at the start of the counseling than participants of the MICG, making it more difficult to achieve intervention effects.

To summarize, the COMET approach is an effective way to foster motivation, volition, and exercise and sport behavior. People seem to benefit from the comprehensive and systematic focus on individual preferences in the counseling. Compared to existing counseling concepts (e.g., Chemtob et al., 2019; Fortier et al., 2011; Fuchs et al., 2011; Kolt et al., 2007), the COMET-approach stands out by combining structured practical experiences with reflection on these experiences. Individuals do not just go to the trial exercise and sport sessions "simply to participate", they get more involved by discussing their experiences and, as a result, become aware of what type of activity they like and what makes them feel good (Schmid et al., 2021). Such a "reflection on action" (Schön, 1983) is a well-established teaching method in the field of educational science (Baartman & Bruijn, 2011), but so far has received relatively little attention in the field of exercise and health promotion (for an exception see, Carl et al., 2020).

Although the COMET approach showed positive results, some limitations need to be stated. First, in the current study, motivational competence, PA-specific self-control, and exercise and sport behavior were analyzed as equivalent outcomes. Based on theory and empirical findings (e.g., Sudeck & Pfeifer, 2016) it is assumed that motivational competence and PA-specific self-control serve rather as mediators. Thus, it can be assumed that we were able to increase motivational competence and PA-specific self-control with the counseling and this, in turn, promoted the exercise and sport behavior (Fischer, Donath et al., 2019). Such a mediation model should be investigated in the future; of particular interest is the relative influence of both mediators on the exercise and sport behavior of the participants. Second, the sensitivity analyses showed that the intervention effect on the weekly volume of exercise and sport was affected by gender. As a result of the counseling, men increased their weekly volume of exercise and sport more than women (see Supplement 5). However, with the available data, it cannot be clarified why this difference came about. Future studies are needed to investigate this point and test the robustness of our results more comprehensively. Third, 39 people had to be excluded from our main analyses, because there was no data on them to be assessed. However, it is important to note that dropout analyses showed no differences in terms of age, gender, and habitual exercise and sport per week. Therefore, the 39 dropouts may not have affected the study findings at all or only marginally. Fourth, the exercise and

sport behavior was self-reported, which poses a bias (Nigg et al., 2020), as the individual's statement may not accurately represent their objective exercise and sport behavior. For instance, one cannot rule out the possibility that social desirability influenced the data (e.g., participants of the IG improved their exercise and sport behavior after they participated in the counseling due to the fact that this is viewed favorably by the research team or others). However, the use of a well-validated questionnaire minimizes this bias (Fuchs et al., 2015). Nevertheless, an accelerometer should be integrated as an additional objective measurement in future studies. Fifth, the fact that the MICG received counseling as a "thank you for participating" after the follow-up assessment (t_3) might have led to an overestimation of the effects of intervention (Cunningham et al., 2013). It can be speculated that participants from the MICG decided not to change their change of behavior rather than moving forward to action. However, intervention effects are even more difficult to prove with a group that has received specific treatment component control (here, minimal intervention) than a non-treatment group (Freedland et al., 2011; Mohr et al., 2009). Therefore, because effects are, indeed, present, they take on even more importance. Sixth, the present sample consists of an above-average number of women (67%) and people with third level education (e.g., university degree; 57%). A potential consequence of this overrepresentation is that the findings may not be fully generalizable to all Swiss adults in a primary prevention setting.

Some research prospects have already been indicated. In addition, the following issues could be addressed in the future: Firstly, a cost-benefit analysis would be appropriate because the counseling event itself consumes many resources (e.g., time, manpower). It could be examined whether some counseling elements can be shortened, eliminated or outsourced (e.g., exercise and sport experiences are gained in real life beyond the counseling). For this, however, it would be necessary to know which counseling element has which effect on motivation, volition and accordingly, the exercise and sport behavior. Secondly, due to the fact that online or telephone counseling is also effective (e.g., Fischer, Kreppke et al., 2019), a further study should clarify if some elements (e.g., one-to-one conversations) of the COMET approach should be implemented in an online setting. Thirdly, the present study was conducted in a non-clinical setting. It would be interesting to know if the COMET approach would also be effective in a clinical setting (e.g., rehabilitation).

Conclusion

In summary, this study shows that exercise and sport counseling which focuses on an individual's preferences has added value. If a person's motive and goal profile fits a suitable exercise and sport activity (Sudeck et al., 2011), it provides affective well-being and maintenance in exercise and sport behavior (van Vianen, 2018). This is the main idea underlying the COMET approach. The conversations within the counseling are based on MI, which is considered to be a partnership-based approach (Miller & Rollnick, 2013) and where counselor and participant jointly search for a suitable activity. The COMET approach has an impact first on psychological constructs (motivational competence and PA-specific self-control) and second, on a person's exercise and sport behavior.

Funding

This research was financially supported by the health insurance, Atupri. The funder had no role in study design, data collection, data analysis, decision to publish, or preparation of the manuscript.

Acknowledgment

This work was in part supported by the University Research Priority Program, "Dynamics of Healthy Aging" of the University of Zürich (Dr. Christina Röcke and Dr. Alexander Seifert). They provided smartphones, which were used during the exercise and sport sessions. In addition, we thank Prof. Dr. Ulrich W. Ebner-Priemer and Dr. Markus Reichert (Karlsruhe Institute of Technology) as well as Marion Springer and Rosemaire Croizier (University of Tübingen), who also lent us smartphones. Furthermore, we thank Dr. Joost van Ginkel (Universiteit Leiden) for his written guidance for multiple imputation in SPSS and his additional advice. Finally, we would like to thank all counselors and especially, Constanze Greule and Lea Reimann for their dedicated work.

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722

Table 1

Counseling elements of the COMET approach and associated outcomes

Counseling element with formal description	Components of motivational interviewing (MI techniques[1])	Primary outcomes	Secondary outcome
1) Assessing relevant personal characteristics: – Motives and goal contents in exercise and sport – Individual motive and goal profile – Motive-based type of sport person – Current and past exercise and sport behavior		Motivational competence	
2) Explanation of and structured reflection on: – Individual motive and goal profile – Motive-based types of sport person	Open-ended questions; reflective statements	Self-concordance; motivational competence	
3) Experiencing diverse exercise and sport activities: – Three different exercise and sport trial sessions with different incentives Assessing exercise and sport experiences before, during, and after each session – Exercise and sport experiences following motive and goal contents – Enjoyment and affective states, among others		Motivational competence	Exercise and sport volume (min/week)
4) Structured reflection and shared discussion about: – Exercise and sport experiences during sessions – Suitable exercise and sport activities – Local exercise and sport provider	Open-ended questions; reflective statements	Self-concordance; motivational competence	
5) Structured reflection and shared decision-making about: – Concrete change plan	Reflective statements; summary statements; develop a change plan	Self-concordance; PA-specific self-control	

6)	Structured reflection and shared discussion about (intervention "booster" by telephone call): – Implementation of the change plan in everyday life – If appropriate: adaptation of change plan based on exercise and sport experiences – If appropriate: identify potential barriers and strategies to overcome them	Open-ended questions; reflective statements; summary statements; adapt/develop a change plan; troubleshooting	Self-concordance; PA-specific self-control

Note. [1]According to the taxonomy of motivational interviewing by Hardcastle et al. (2017).

Table 2

Participant characteristics at t_1

	Intervention group		**Minimal intervention control group**
	Subsample before outlier analysis/ final subsample	Final subsample	Subsample before outlier analysis
	n = 56	*n* = 73	*n* = 74
Variables	**% or *M* (SD)**	**% or *M* (SD)**	**% or *M* (SD)**
Gender	68% female, 32% male	66% female, 34% male	66% female, 34% male
Age	41.25 years (13.31 years)	43.27 years (12.17 years)	43.38 years (12.12 years)
BMI	26.79 (5.80)	26.12 (4.56)	26.05 (4.86)
Nationality			
Swiss	86%	84%	84%
Other	14%	16%	16%
Level of education			
No formal education	0%	3%	3%
First-level education (e. g. primary school)	0%	1%	1%
Second-level education (e. g. apprenticeship)	43%	34%	34%
Third-level education (e. g. university)	57%	56%	56%
Other	0%	6%	6%
Weekly volume of exercise and sport (last 4 weeks)	28.84 min (60.89 min)	44.36 min (64.42 min)	49.44 min (77.46 min)
Inactive	73%	56%	55%
1-74 min	13%	17%	16%
≥ 75 min	14%	27%	28%

Note. *M* = mean, *SD* = standard deviation.

Table 3

Descriptive statistics of intervention group and minimal-intervention control group

	Intervention group (*n* = 56)			**Minimal-intervention control group (*n* = 73)**		
	Assessment t_1	**Assessment t_2**	**Assessment t_3**	**Assessment t_1**	**Assessment t_2**	**Assessment t_3**
	***M* (*SD*)**	***M* (*SD*)**	***M* (*SD*)**	***M* (*SD*)**	***M* (*SD*)**	***M* (*SD*)**
Motivational competence (MC)	2.82 (0.79)	3.47 (0.83)	3.59 (0.97)	2.95 (0.79)	3.18 (0.85)	3.06 (0.90)
PA-specific self-control (SC)	2.46 (0.88)	2.85 (0.91)	2.92 (0.89)	2.71 (0.88)	2.78 (0.97)	2.65 (0.91)
Intrinsic motivation mode	3.04 (1.24)	3.36 (1.21)	3.41 (1.16)	3.03 (1.23)	3.28 (1.25)	3.24 (1.16)
Identified motivation mode	4.80 (0.97)	4.66 (1.00)	4.49 (1.09)	4.43 (0.97)	4.63 (1.01)	4.49 (1.10)
Introjected motivation mode	3.24 (1.03)	3.23 (1.18)	3.12 (1.24)	3.09 (1.03)	3.40 (1.19)	3.40 (1.20)
Extrinsic motivation mode	1.66 (0.88)	1.79 (1.11)	1.75 (1.03)	1.78 (0.88)	1.94 (1.17)	1.87 (1.02)
Weekly volume of exercise and sport	28.84 (62.91)	60.67 (81.88)	119.98 (123.64)	44.36 (62.92)	46.81 (85.40)	58.34 (114.98)

Note. Scale from MC and SC range from 1 to 5. Scale from all motivation modes range from 1 to 6. The data are the pooled values. *M* = mean, *SD* = standard deviation.

Table 4

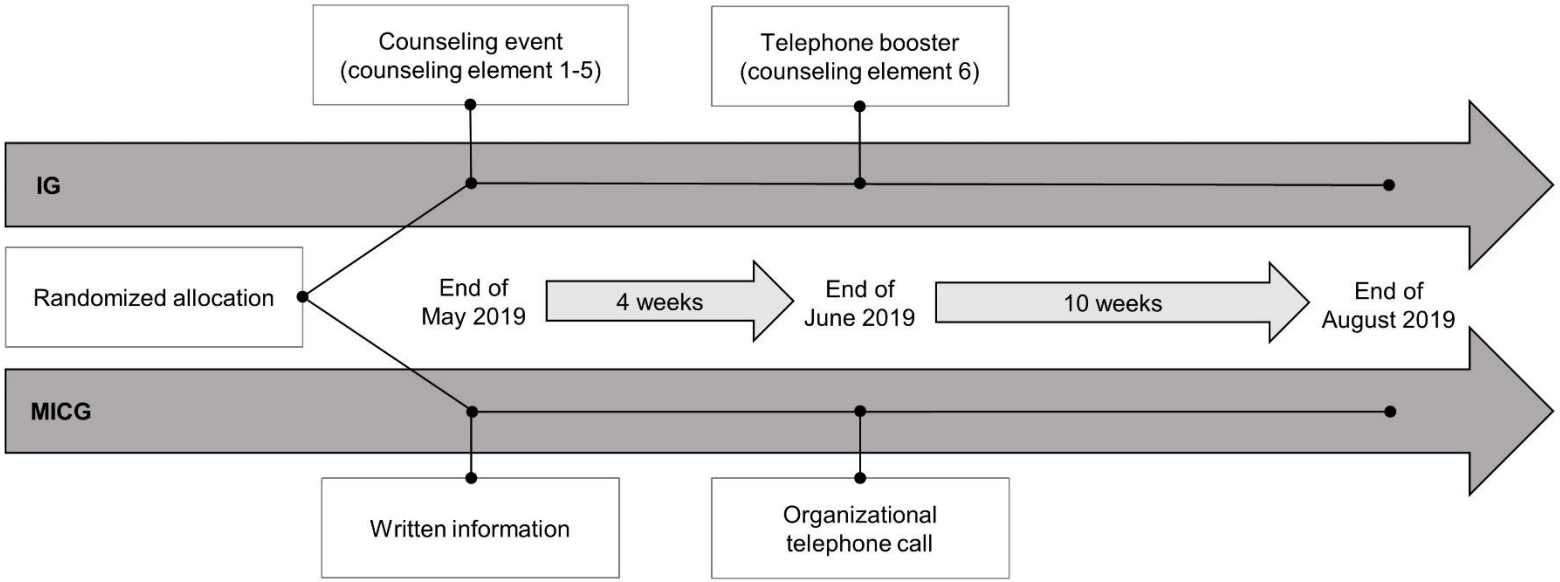
Time, group, and intervention effects (ANOVA)

	Effects t_1-t_2-t_3								
	Intervention effect			**Main effect *time***			**Main effect *group***		
Variables	***F***	***p***	η^2	***F***	***p***	η^2	***F***	***p***	η^2
Motivational competence (MC)	11.02	< .001	.16	24.78	< .001	.36	3.40	.661	.01
PA-specific self-control (SC)	6.57	.002	.08	5.72	.004	.09	4.42	.363	.01
Intrinsic motivation mode	0.39	.678	.01	5.99	.006	.25	0.84	.773	.00
Identified motivation mode	2.64	.075	.04	1.83	.164	.02	2.51	.114	.02
Introjected motivation mode	2.67	.080	.10	1.20	.309	.04	0.82	.367	.01
Extrinsic motivation mode	0.01	.989	.00	1.26	.287	.02	0.29	.589	.00
Weekly volume of exercise and sport	8.67	< .001	.15	15.22	< .001	.35	6.63	.011	.37

Note. The term intervention effect refers to the interaction effect *group* × *time*. $N = 129$.

Figure 1

Intervention procedure and time points of assessments



Note. IG = intervention group; MICG = minimal-intervention control group; PA = physical activity.

Figure 2

CONSORT flow diagram of participants

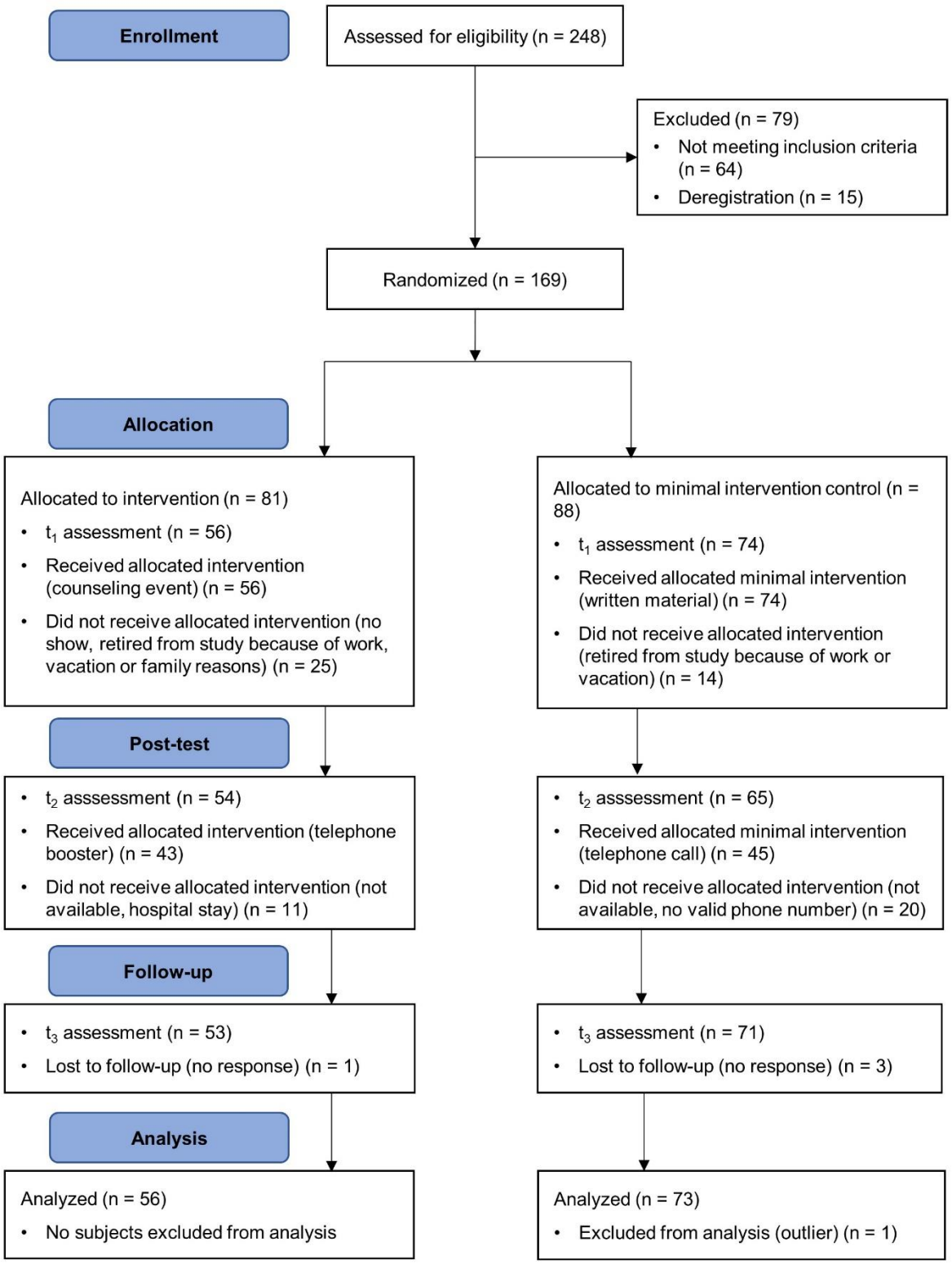
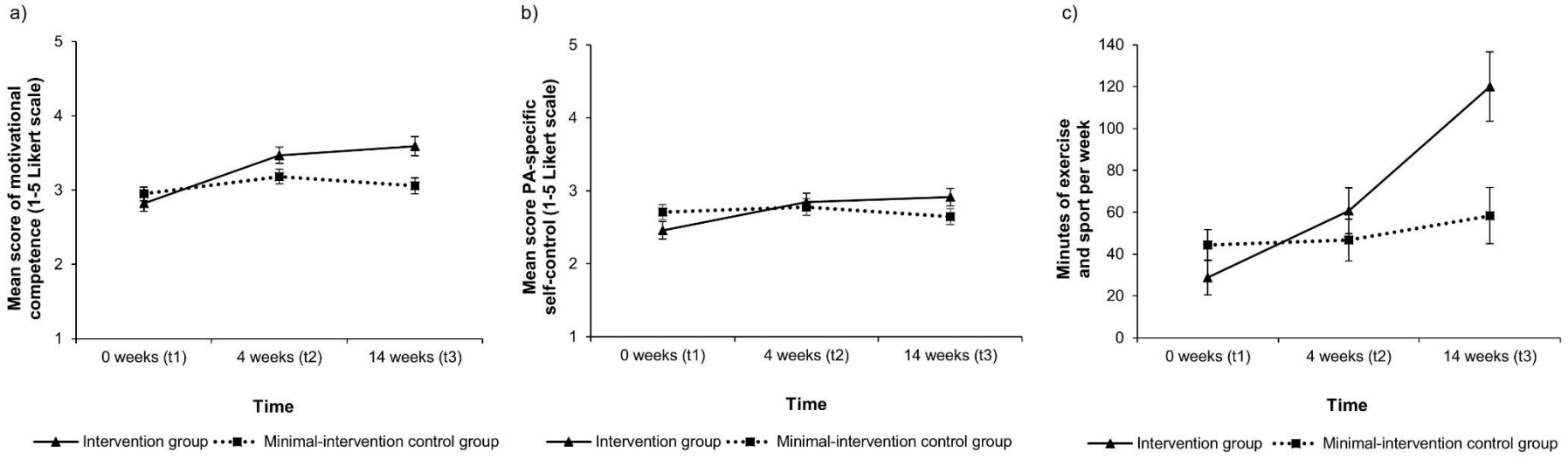


Figure 3

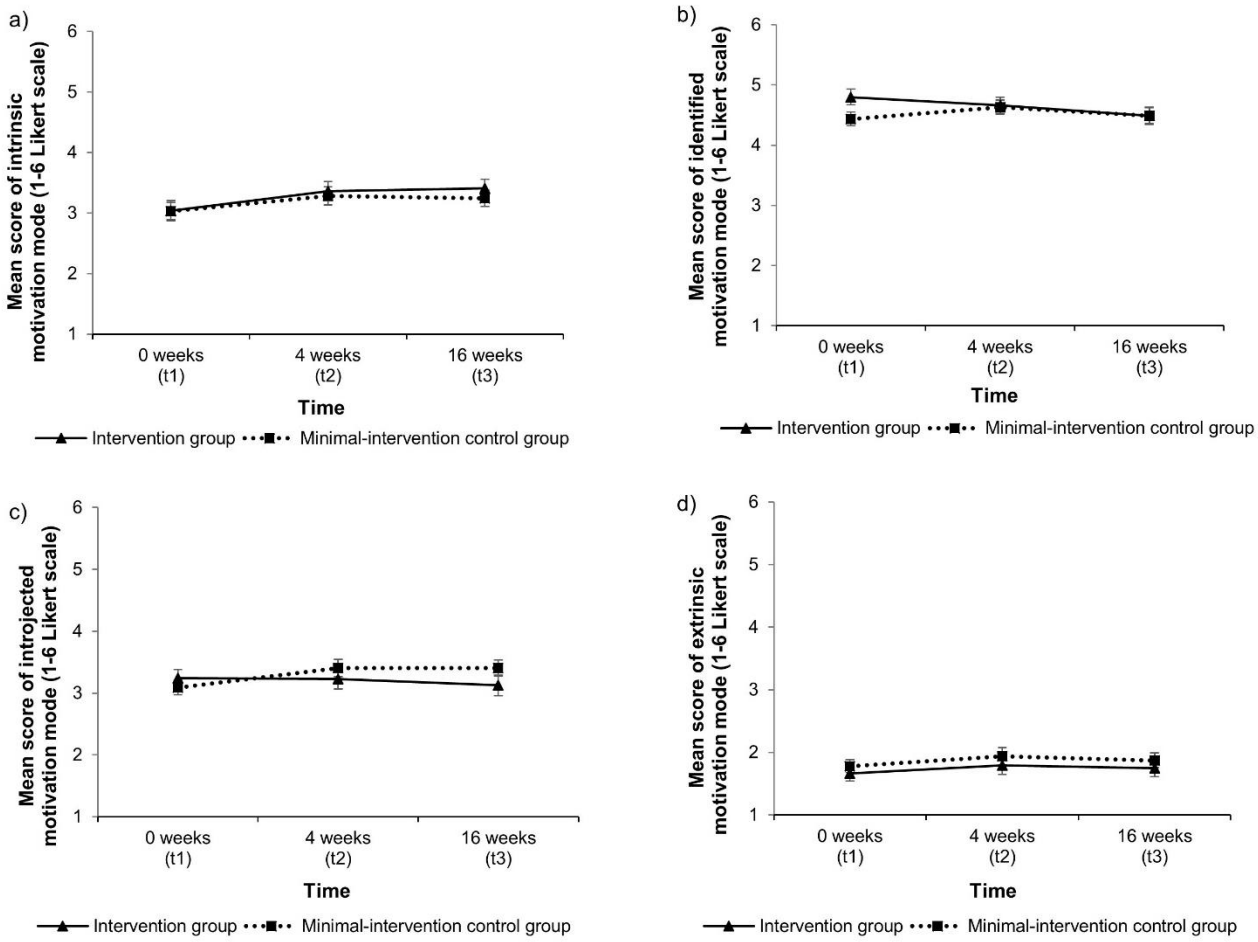
Means and error bars (representing the standard error of the mean) of a) motivational competence, b) PA-specific self-control, and c) self-reported weekly volume of exercise and sport (minutes)



Note. PA = Physical activity.

Figure 4

Means and error bars (representing the standard error of the mean) of a) intrinsic motivation mode, b) identified motivation mode, c) introjected motivation mode, and d) extrinsic motivation mode



Supplement 1

Overview counseling concepts.

Study	Theoretical framework	Design (groups)	Intervention duration	Sample	Type of intervention	Content of counseling	Key findings[1]
Barrett et al. (2020)	– Self-determination theory (Deci & Ryan, 2008) – Motivational interviewing (Miller & Rollnick, 2013) – BCT: Cognitive–behavioral therapy (Beck et al., 1979)	RCT (2)	3 months	120 insufficiently active adults	– 1 education session – 5 telephone sessions (20 min)	– Action planning – Coping planning – Identify and address unrealistic PA expectations – Identify PA outcome expectations – Goal setting – Self-monitoring	– Objective assessed daily MVPA: IG increased sig. more than CG – PA self-efficacy: IG increased sig. more than CG
Bennett et al. (2007)	– Transtheoretical model of behavior change (Prochaska & Velicer, 1997) – Social cognitive theory (Bandura, 1986) – Motivational interviewing (Miller & Rollnick, 2013)	RCT (2)	6 months	56 low active adult cancer survivors	– 1 in-person counseling session (approx. 30 min) – 2 telephone calls (20 min)	– Coping planning – Goal setting – Identify advantages and disadvantages of exercise	– Self-reported regular PA: IG increased sig. more than CG – Self-efficacy for engaging in regular PA: IG was able to increase faster – Aerobic fitness: No sig. group differences
Chemtob et al. (2019); study protocol: Sweet et al. (2017)	– Self-determination theory (Deci & Ryan, 2008) – Behavior change techniques and self-regulatory strategies (Michie et al., 2013) – Motivational interviewing (Miller & Rollnick, 2013)	Pilot RCT (2)	2 months	24 adults with spinal cord injury	– 8 LTPA counseling sessions video-based (60 min)	– Action planning – Coping planning – Discussion on preferences – Goal setting – Self-monitoring	– Self-reported LTPA: IG increased sig. more than CG – Self-reported MVPA: IG increased sig. more than CG – Autonomos motivation: IG reported sig. higher values than CG – Controlled motivation: IG reported sig. higher values than CG

Fischer, Kreppke et al. (2019); study protocol: Fischer, Donath et al. (2019)	– Behavior change techniques (Michie et al., 2013) – MoVo process model (Fuchs et al., 2011)	RCT (3)	6 months	288 low active adults	– Coaching: 12 bi-weekly telephone calls (first two sessions 30-40 min, then 15-20 min) – Coaching & SMS: 12 bi-weekly telephone calls (first two sessions 30-40 min, then 15-20 min) and 48 tailored SMS	– Action planning – Behavior practice/rehearsal – Coping planning – Feedback on behavior – Identify advantages and disadvantages of exercise – Instruction on how to perform behavior – Goal setting – Review on behavioral goal(s) – Self-monitoring – Social support	– Self-reported MVPA: Both IG increased sig. more than CG – Objective assessed MVPA: Both IG increased sig. more than CG
Fortier et al. (2011); technical note: Fortier et al. (2007)	– Self-determination theory (Deci & Ryan, 2008) – Social cognitive theory (Bandura, 1986) – "7 As model" (Whitlock et al., 2002)	RCT (2)	3 months	120 low active adults	– 6 bi-weekly sessions (3 in-person 60/40 min, 3 on the telephone 20 min)	– Action planning – Coping planning – Discussion on preferences – Goal setting	– Self-reported LTPA: IG sig. more than CG – Objective assessed PA: No sig. differences between groups
Fuchs et al. (2011) and Göhner et al. (2009)	– MoVo process model (Fuchs et al., 2011) – MoVo-Lisa (Fuchs et al., 2010)	Quasi-experimental (2)	2.5 months	220 patients in a rehabilitation program	– First group meeting (60 min) – One-on-one interview (10 min) – Second group meeting (90 min) – Postal reminder – Short telephone contact (10 min)	– Action planning – Coping planning – Discussion on preferences – Implementation intentions	– Self-reported PA: IG increased sig. more than CG – Self-efficacy: IG increased sig. more than CG – Strength of goal intention: IG increased sig. more than CG – Implementation intentions: IG has more detailed plans than CG – Volitional intention shielding: IG has an optimized ratio of intention shielding strategies and perceived barriers – Self-concordance: No intervention effect

Kolt et al. (2007)	– Transtheoretical model of behavior change (Prochaska & Velicer, 1997) – Motivational interviewing (Miller & Rollnick, 2013) – BCT: Cognitive–behavioral therapy (Beck et al., 1979)	RCT (2)	3 months	186 low-active older adults	– 8 telephone counseling sessions (weekly for the first 4 weeks, bi-weekly for the remaining 8 weeks, approx. 10-15 min)	– Coping planning – Discussion on preferences – Goal setting – Identify advantages and disadvantages of exercise – Identify discrepancies between behavior and goals – Social support	– Self-reported LTPA: IG increased sig. more than CG – Self-reported MVPA: IG increased sig. more than CG
Pinto et al. (2005)	– Motivational interviewing (Miller & Rollnick, 2013) – "5 As model" (Whitlock et al., 2002)	RCT (2)	6 months	100 old and inactive adults	– 3 face-to-face PA counseling sessions (30-45 min) – PA prescription tailored to participant – 12 PA counseling telephone calls (approx. 15 min) – 12 PA tip sheets sent by email	– Coping planning – Goal setting – Identify advantages and disadvantages of exercise	– Self-reported PA: IG increased sig. more than CG – Objective assessed PA: IG increased sig. more than CG
Pinto et al. (2013)	– Transtheoretical model of behavior change (Prochaska & Velicer, 1997) – Social cognitive theory (Bandura, 1986) – Motivational interviewing (Miller & Rollnick, 2013)	RCT (2)	3 months	192 low active women with breast cancer	– 1 in-person instructions – 8 telephone calls (weekly for 4 weeks, biweekly for 8 weeks, approx. 15 min)	– Action planning – Goal setting – Self-monitoring – Strengthening self-efficacy	– Self-reported PA with moderate intensity: IG increased more than CG – Motivational readiness: IG outperformed CG in terms of moving from contemplation/preparation to action/maintenance

Simons-Morton et al. (2001)	– Social cognitive theory (Bandura, 1986) – Transtheoretical model of behavior change (Prochaska & Velicer, 1997)	RCT (3)	24 months	810 inactive adults (separate analyses for men and women)	– Advice: 3 in-person instructions (2-4 min); educational material – Assistance: Advice and 1 in-person behavioral counseling session (30-40 min), telephone call, interactive email component (e.g., newsletter), step-counter – Counseling: Advice, assistance and telephone counseling (biweekly, monthly after 6 weeks for the first year, in the second year if negotiated); weekly classes (60 min)	– Action planning – Coping planning – Identify advantages of exercise – Instruction on how to perform behavior – Goal setting	– Self-reported PA: No sig. differences in women or men; exept after 6 months women in counseling sig. higher value than assistance – Cardiorespiratory fitness: Women increased sig. more in assistance and counseling than advice; Men showed no sig. differences between groups
van Hoecke et al. (2014)	– Self-determination theory (Deci & Ryan, 2008) – Behavior change techniques (Michie et al., 2013) – Motivational interviewing (Miller & Rollnick, 2013)	RCT (3)	2.5 months	442 sedentary adults over 60 years	– Refer: Informative session (15 min), booklet – Walk: Refer and individual walking program – Coach: Refer, walk and PA coaching (60 min), live or telephone booster every 10 days (max. 30 min)	– Action planning – Coping planning – Goal setting – Home-based exercise programm – Individualized walking program – Information about local opportunities	– Self-reported PA: Both IG increased sig. more than CG – Objective assessed PA: No sig. intervention effect

Note. [1]The keyfindings refer to the results of the studies that seem relevant in context of the current study. BCT = Behavior change techniques; CG = Control group; IG = Intervention group; LTPA = Leisure time physical activiy; MVPA = Moderate to vigorous physical activity; PA = Physical activity; RCT = Randomized controlled trial; sig. = significant; SMS = short message service.

Supplement 2

CONSORT 2010 checklist of information to include when reporting a randomised trial*

Section/Topic	Item No	Checklist item	Reported on page No
Title and abstract			
	1a	Identification as a randomised trial in the title	Titel
	1b	Structured summary of trial design, methods, results, and conclusions (for specific guidance see CONSORT for abstracts)	Abstract
Introduction			
Background and objectives	2a	Scientific background and explanation of rationale	1-4
	2b	Specific objectives or hypotheses	5
Methods			
Trial design	3a	Description of trial design (such as parallel, factorial) including allocation ratio	5
	3b	Important changes to methods after trial commencement (such as eligibility criteria), with reasons	6/7
Participants	4a	Eligibility criteria for participants	7
	4b	Settings and locations where the data were collected	6
Interventions	5	The interventions for each group with sufficient details to allow replication, including how and when they were actually administered	7-10 & Figure 1
Outcomes	6a	Completely defined pre-specified primary and secondary outcome measures, including how and when they were assessed	3/6/10-11 & Figure 1
	6b	Any changes to trial outcomes after the trial commenced, with reasons	-

Sample size	7a	How sample size was determined	6
	7b	When applicable, explanation of any interim analyses and stopping guidelines	-
Randomisation:			
Sequence generation	8a	Method used to generate the random allocation sequence	5-6
	8b	Type of randomisation; details of any restriction (such as blocking and block size)	5
Allocation concealment mechanism	9	Mechanism used to implement the random allocation sequence (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned	5-6
Implementation	10	Who generated the random allocation sequence, who enrolled participants, and who assigned participants to interventions	6
Blinding	11a	If done, who was blinded after assignment to interventions (for example, participants, care providers, those assessing outcomes) and how	-
	11b	If relevant, description of the similarity of interventions	-
Statistical methods	12a	Statistical methods used to compare groups for primary and secondary outcomes	11
	12b	Methods for additional analyses, such as subgroup analyses and adjusted analyses	11
Results			
Participant flow (a diagram is strongly recommended)	13a	For each group, the numbers of participants who were randomly assigned, received intended treatment, and were analysed for the primary outcome	11 & Figure 2
	13b	For each group, losses and exclusions after randomisation, together with reasons	7 & Figure 2
Recruitment	14a	Dates defining the periods of recruitment and follow-up	6 & Figure 1
	14b	Why the trial ended or was stopped	6

Baseline data	15	A table showing baseline demographic and clinical characteristics for each group	Table 2
Numbers analysed	16	For each group, number of participants (denominator) included in each analysis and whether the analysis was by original assigned groups	7/11 & Figure 2
Outcomes and estimation	17a	For each primary and secondary outcome, results for each group, and the estimated effect size and its precision (such as 95% confidence interval)	11-13 & Table 4 & Figure 3 & Figure 4
	17b	For binary outcomes, presentation of both absolute and relative effect sizes is recommended	-
Ancillary analyses	18	Results of any other analyses performed, including subgroup analyses and adjusted analyses, distinguishing pre-specified from exploratory	13
Harms	19	All important harms or unintended effects in each group (for specific guidance see CONSORT for harms)	-
Discussion			
Limitations	20	Trial limitations, addressing sources of potential bias, imprecision, and, if relevant, multiplicity of analyses	15-16
Generalisability	21	Generalisability (external validity, applicability) of the trial findings	16
Interpretation	22	Interpretation consistent with results, balancing benefits and harms, and considering other relevant evidence	13-16
Other information			
Registration	23	Registration number and name of trial registry	6
Protocol	24	Where the full trial protocol can be accessed, if available	-
Funding	25	Sources of funding and other support (such as supply of drugs), role of funders	17

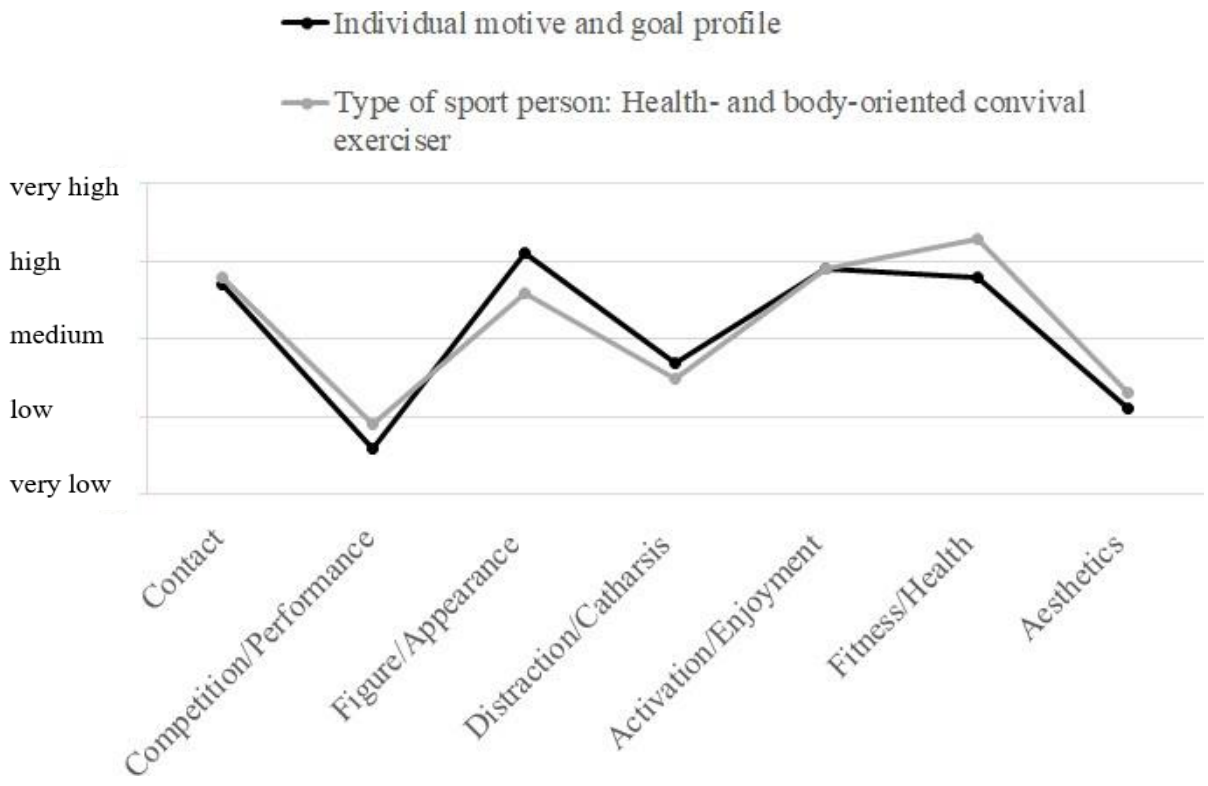
*We strongly recommend reading this statement in conjunction with the CONSORT 2010 Explanation and Elaboration for important clarifications on all the items. If relevant, we also recommend reading CONSORT extensions for cluster randomised trials, non-inferiority and equivalence trials, non-pharmacological treatments, herbal interventions, and pragmatic trials. Additional extensions are forthcoming: for those and for up to date references relevant to this checklist, see www.consort-statement.org.

Supplement 3

Individual exercise and sport counseling

Your code: B88ABE

Health- and body-orientedconvival exerciser



Supplement 4

Three trial exercise and sport sessions and their activities

	Focused incentives	**Warm-up (5 min)**	**Main part (20 min)**	**Cool-down (5 min)**
Session A	Figure/Appearance, Fitness, Health	Dynamic stretching and soft strengthening exercises, e.g. jumping jacks, high knees, plank	Cardio exercises, e.g. running around doing lunges when the instructor claps; core-strength exercises	Full-body stretching, e.g. legs and back, neck, chest and arms
Session B	Contact, Competition/ Performance	Name game with easy running	Competitive group games with the ranking announced afterwards, e.g. ball tag, relay races with cones	Cooperative game, e.g. the whole group stands in a circle holding hands, one half leans forward while the other half leans back (alternately)
Session C	Aesthetics, Distraction/Catharsis	Full-body mobilization with flowing movements, e.g. leg swings, arm circles, easy body waves, hip circles	Various dance elements with music; Tai Chi exercises focusing on breathing and soft movements	Exercises of body-awareness, standing, with eyes closed

Supplement 5

Descriptives of the weekly volume of exercise and sport per group and gender

	Intervention group		**Minimal intervention control group**	
Gender	**Women** (*n* = 38)	**Men** (*n* = 18)	**Women** (*n* = 48)	**Men** (*n* = 25)
	***M* (*SD*)**	***M* (*SD*)**	***M* (*SD*)**	***M* (*SD*)**
Weekly volume of exercise and sport: t_1 assessment	32.70 (64.07)	20.69 (54.39)	45.62 (62.00)	41.95 (70.08)
Weekly volume of exercise and sport: t_2 assessment	61.02 (87.00)	61.01 (81.09)	46.04 (68.50)	48.39 (70.00)
Weekly volume of exercise and sport: t_3 assessment	84.77 (95.31)	174.30 (159.88)	58.15 (78.37)	50.75 (71.97)

Note. All values are in minutes. *M* = mean, *SD* = standard deviation.