Scand J Med Sci Sports 2017: 27: 1026–1034
doi: 10.1111/sms.12713

SCANDINAVIAN JOURNAL OF MEDICINE & SCIENCE IN SPORTS

The effects of training group exercise class instructors to adopt a motivationally adaptive communication style

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Accepted for publication 12 May 2016

Drawing from self-determination theory (Deci & Ryan, 2002), we developed and tested an intervention to train fitness instructors to adopt a motivationally adaptive communication style when interacting with exercisers. This was a parallel group, two-arm quasi-experimental design. Participants in the intervention arm were 29 indoor cycling instructors (n = 10 for the control arm) and 246 class members (n = 75 for the control arm). The intervention consisted of face-to-face workshops, education/information video clips, group discussions and activities, brainstorming, individual planning, and practical tasks in the cycling studio. Instructors and exercisers responded to validated questionnaires about instructors' use of motivational strategies and other motivation-related variables before the first workshop and at the end of the third and final workshop (4 months later). Time × arm interactions revealed no significant effects, possibly due to the large attrition of instructors and exercisers in the control arm. Within-group analyses in the intervention arm showed that exercisers' perceptions of instructor motivationally adaptive strategies, psychological need satisfaction, and intentions to remain in the class increased over time. Similarly, instructors in the intervention arm reported being less controlling and experiencing more need satisfaction over time. These results offer initial promising evidence for the positive impact of the training.

Group fitness classes provide regular, structured, and supervised exercise opportunities and present a promising option for frequent exercise among adults for whom traditional sport or individual physical activities (e.g., attending the gym, jogging) may not appeal. The evident widespread availability and growth in popularity of exercise classes implies that the majority of attendees reap such benefits. However, this is unfortunately not the case as turnover in attendees is high (Berger et al., 2002) and many experience a lifetime cycle of relapse from an active to inactive lifestyle (Sallis et al., 1990). Thus, the motivation that underpinned the original intention to attend an exercise class does not always sustain the behavior longer term. It is not uncommon for exercise instruction to adopt a "no-pain, no-gain" mentality, often driven by the assumption that more controlling, pressurizing environments will be more likely to make class attendees work hard (Edmunds et al., 2008; Hancox et al., 2015a, b). Despite the body of evidence that suggests such approaches will undermine, rather than foster quality motivation (Teixeira et al., 2012), exercise instructors typically do not receive training in how to motivate their clients in a more adaptive way. The development of instructor training programs that pull from contemporary theories of motivation could be an important step to address this gap in instructor training provision.

Self-determination theory (SDT; Ryan & Deci, 2000) distinguishes between high quality (i.e., self-determined or autonomous motivation) and low quality (i.e., controlled or amotivation) of motivation. According to this theory, exercise motivation will be of high quality and sustainable when exercisers' three basic psychological needs are supported by their instructor (Deci & Ryan, 2000). These are the needs to feel autonomy (i.e., their actions are in accordance with interests, values, and personal goals), relatedness (i.e., connected to and cared for by others), and competence (i.e., to feel effective and able to meet the challenges faced). A plethora of research has supported the overall premise that an

Trial registration: ANZCTR.org.au: ACTRN12615000036516 (19/01/2015).

SDT-based communication style can satisfy exercisers' psychological needs and promote autonomous and sustained exercise engagement (see Teixeira et al., 2012, for a recent review). For example, adherence to an exercise program lasting 12 weeks was associated with moderate increases in the basic needs for relatedness and competence, as well as autonomous motivation to exercise (Wilson et al., 2003). Among those who adhere to exercise for the longer term, a shift in the quality of motivation from being more controlled to more autonomous has also been identified (Wilson et al., 2003; Rahman et al., 2011). According to the evidence, instructors can promote need satisfaction and autonomous exercise motivation by adopting a communication style that is high in autonomy support (i.e., Black & Deci, 2000; Reeve, 2006), structure (Reeve, 2002; Skinner & Edge, 2002), and interpersonal involvement (Deci & Ryan, 1991; Markland & Tobin, 2010). The communication style should also be void of controlling features (Bartholomew et al., 2009). Examples of how these communication styles are manifested in exercise settings are presented elsewhere (e.g., see Hancox et al., 2015a, b).

However, the vast majority of previous relevant studies are non-experimental in nature. Among the intervention studies that have been conducted, only a few (Fortier et al., 2007; Edmunds et al., 2008) have focused on exercise classes targeting typical fitness center users rather than clinical or "at risk" populations. While these studies have supported the premise that it is possible to be more need supportive, they also had some methodological limitations. Specifically, in both studies only one instructor delivered the intervention to the exercisers. In addition, in the case of Edmunds et al. (2008), the same instructor created both the intervention and control arms. In the Fortier et al.'s (2007) study, the intervention was delivered via one-to-one consultations, which do not reflect the majority of interactions in group exercise classes. Furthermore, these studies only measured outcomes at the exerciser level and did not consider how participation in an SDT-based intervention may also impact the instructors' motivation, basic need satisfaction, and perceptions of his or her own behavior. Empirical evidence suggests that being need supportive toward others is beneficial for ones' own need satisfaction and motivation (Deci et al., 2006). Thus, it is of interest to understand the impact of learning to be more need supportive upon the instructors' themselves. Extending past work in the exercise domain, we also examined perceived changes in both adaptive (i.e., autonomy supportive, relatedness supportive, structured) and maladaptive (i.e., controlling) aspects of instruction/communication style. This is an important extension as these communication styles are orthogonal (Bartholomew et al., 2009). That is, while we would anticipate them to be generally inversely related, it is possible that an instructor could utilize both adaptive and maladaptive types of communication during the same exercise class. Finally, with regard to intervention design, previous SDT-based studies in the exercise domain have neglected to include or fully document the use of behavior change techniques to facilitate changes in instructor behavior. In the present investigation, we tested the impact of a multicomponent intervention in which the training of instructors to be more need supportive was coupled with behavior change techniques from the refined CALO-RE taxonomy (Michie et al., 2011). More details about the operationalization of these techniques are reported elsewhere (Hancox et al., 2015a, b).

5In summary, the present study aimed to examine the impact of a SDT-based communication training program for group exercise instructors, upon both exercisers and instructors. This was a pilot trial (see Arain et al., 2010) designed to test procedures, methods, and protocol for a future cluster randomised control trial (RCT). For both exercisers and instructors, we expected a significant arm × time interaction. Specifically, for exercisers in the intervention arm, compared to those in the control arm, we expected (a) significantly greater increases in perceptions of autonomy support, structure, and interpersonal involvement provided by their class instructor, as well as their own basic need satisfaction, autonomous motivation, and outcome variables frequently assessed in the SDT literature (i.e., attention, subjective vitality, and intentions to continue exercising), and (b) significantly greater decreases in perceptions of their instructor's controlling behaviors as well as their own controlled motivation regulations. Similarly, for instructors in the intervention arm, compared to those in the control arm, we expected (c) significantly greater increases in reported use of autonomy supportive, structured, and interpersonally involving behaviors, as well as in their basic need satisfaction and autonomous motivation to instruct, and (d) significantly greater decreases in perceptions of their own use of controlling behaviors and controlled motivation to instruct.

Method

Participants

Participants were an opportunity sample of Les Mills certified indoor cycling instructors (RPM style) and exercisers attending one of the instructors' classes. A total of 43 indoor cycling instructors, certified with Les Mills International, were recruited from within Australia. To be eligible instructors needed to be aged 18 years and over and teach a regular indoor cycling session at least once a week. Instructors were aged 25–53 years (M = 37.28 years; SD = 7.65) and had on average 4.03 years of experience working as a group cycling

instructor (SD = 3.06, range = 6 months–14 years). Of the 29 instructors in the intervention arm that provided baseline assessments (wave 1), only 23 provided end-of-intervention assessments (wave 2). The number of instructors in the control arm at waves 1 and 2 were 14 and 10, respectively.

Eligibility criteria for exercisers included: being aged 18 years and over, attending the pre-identified class of one of the instructors participating in the study, and being willing and able to complete and return the questionnaire pack to the researchers within the specified time periods. A total of 321 exercisers (68 male, 249 female, 4 did not indicate their gender) participated in the study. Exercisers ranged from 18 to 78 years of age (M = 39.88, SD = 13.12). Four percent of exercisers reported attending group cycling classes less than once a month, 4.4% 1–3 times a month, 19% once a week, 55.8% 2–3 times per week, 14% 4–5 times per week, and 2.2% reported attending classes more than 5 times per week. Exercisers had been attending the particular pre-defined class with their instructor for a range of 0–12 years (M = 1.13, SD = 1.41), with 49.8% of exercisers having been attending the class for 6 months or less. Two hundred and forty-six exercisers in the intervention arm provided data at wave 1 and 88 exercisers, from those instructors who remained throughout the study, provided data at wave 2. These numbers were 75 and 16 for the control arm, respectively.

Design and procedures

This was a parallel group, two-arm quasi-experimental design. Random assignment of instructors to treatment groups was not possible due to low levels of recruitment uptake within the relatively small geographical area of Perth, Australia. The instructors recruited from within 40 km of Perth, Australia were assigned to the intervention arm. Further recruitment was targeted at certified group cycling instructors elsewhere within Australia, and those recruited instructors from outside of Perth were assigned to the control group. The arm allocation was based on geographic location because (a) there was not a sufficient number of RPM instructors in Perth to have them assigned to both arms, and (b) due to the geographic isolation of Perth, it would have been too costly to deliver face-to-face workshops in other parts of Australia. Exercise participants were blinded to the treatment group of their instructor. Outcome measures for both instructors and participants were collected at baseline and 3 months later.

A detailed description of the intervention delivered to group exercise instructors is provided elsewhere (Hancox et al., 2015b). Results regarding the feasibility and acceptability of the training are provided in Hancox et al. (2016). Briefly, the intervention was grounded in SDT and aimed to train exercise instructors to deliver indoor cycling classes using a motivationally adaptive communication style. Instructors were taught how to maximize their use of motivationally adaptive strategies and minimize their use of motivationally maladaptive strategies. The training was delivered over a 10-week period and consisted of three face-to-face workshops and supplementary training materials which included: workshop slides and handouts, rich descriptions of the motivational strategies, personal action plans, self-reflection diaries of successes and failures in putting the strategies into practice, a dedicated (private) Facebook page and discussion forum, and phone/e-mail support. Contemporary behavior change techniques were embedded within the training program (e.g., barrier identification, prompt practice, performance feedback, selfmonitoring, and action planning) to aid instructors in effectively integrating the training with their own instruction style. The control group had the opportunity to view the workshops online and access the other online material once the second data collection was completed. The study was approved by the ethics committee of a large Australian university. Informed written consent was gained from all participants prior to taking part.

Measures

For all questionnaires listed below, exercisers and instructors provided ratings of their experiences over the last month prior to the data collection point. Cronbach's alpha coefficients, response range, and an example item for each measure are displayed in Tables 1 and 2.

Table 1. Cronbach's alpha coefficients, response range, and example item for all measures administered to exercisers

	α		Response range	Example item
	T1	T2		
Perceived instructor behaviors				
Autonomy support	0.91	0.91	1 (strongly disagree) to 7 (strongly agree)	My instructor provides me with choices and options
Control	0.90	0.95		My instructor tries to motivate me by making me feel guilty
Structure	0.95	0.78		My instructor delivers workouts that are suited to my level
Involvement	0.81	0.79		My instructor makes time for me before and after class
Psychological need satisfaction				
Autonomy	0.75	0.83	1 (not at all true for me) to 5 (very true for me)	The workouts that I get are in agreement with my choices and preferences
Competence	0.79	0.75		I have made a lot of progress in terms of what I want to achieve
Relatedness	0.88	0.89		I get on well with the people that I workout with
Motivation				
Autonomous	0.76	0.63	0 (strongly disagree) to 4 (strongly agree)	Because it's fun
Controlled	0.84	0.81		Because other people say I should
Amotivation	0.84	0.68		But I think attending this class is a waste of time
Motivation-related outcomes				
Intention	0.65	0.66	0 (strongly disagree) to 4 (strongly agree)	I intend to continue attending this particular class
Vitality	0.93	0.93	1 (not at all true) to 7 (very true)	I feel alive and full of vitality
Attention	0.74	0.74	1 (never true) to 5 (always true)	I pay attention to what the instructor is saying

Table 2. Cronbach's alpha coefficients, response range, and example item for all measures administered to instructors

	α		Response range	Example item
	T1	T2		
Instructor behaviors				
Autonomy support	0.78	0.85	1 (strongly disagree) to 7 (strongly agree)	I provide my clients with choices and options
Control	0.84	0.82		I try to motivate my clients by drawing attention to the consequences of not working hard enough
Structure	0.96	0.94		I adjust the workouts to suit my clients' level.
Involvement	0.70	0.71		I make time for all my clients before and after the class
Psychological need satisfaction				
Autonomy	0.71	0.78	1 (not at all true for me) to 5 (very true for me)	I feel a sense of choice and freedom in how I deliver the workouts
Competence	0.87	0.91		I feel confident that I can do my job well
Relatedness	0.75	0.79		I feel my clients value me
Motivation				
Autonomous	0.79	0.84	1 (strongly disagree) to 5 (strongly agree)	Because I derive much pleasure from learning new things
Controlled	0.66	0.55		Because I want to show others what I am good at
Amotivation	0.86	0.66		I don't know, too much is expected of us

Exercisers' perceptions of their instructors' motivation style

Perceptions of instructor autonomy support was measured using the 6-item short version of the Health Care Climate Questionnaire (HCCQ; Williams et al., 1996), adapted for exercise settings (Edmunds et al., 2006). The HCCQ has demonstrated adequate reliability in previous studies in exercise settings (e.g., Edmunds et al., 2006). Items were adapted from Markland and Tobin (2010) to assess perceptions of structure (five items) and involvement (five items). Ten items were developed specifically for the present study to measure exercisers' perceptions of the instructor's controlling behaviors.

Exercisers' basic need satisfaction

Satisfaction of exercisers' basic needs was measured using the Basic Psychological Needs in Exercise Scale (BPNES; Vlachopoulos et al., 2010), with wording adapted slightly for the indoor group cycling context. The BPNES consists of 11 items; 4 for autonomy, 4 for competence, and 3 for relatedness. Two additional items were included in the present study to measure relatedness satisfaction in relation to the instructor. The validity and reliability of the BPNES has been supported in previous research (e.g., Vlachopoulos et al., 2013).

Exercisers' motivation

Exercisers' motivation to attend classes was measured using the 19-item Behavioural Regulation in Exercise Questionnaire-2 (BREQ-2; Markland & Tobin, 2004). Previous research (Markland & Tobin, 2004) has provided support for the internal reliability of the measure. For parsimony purposes, we used composite scores for autonomous (intrinsic, integrated, and identified regulations) and controlled (introjected and external regulations) motivations. Findings for both exercisers and instructors were the same when individual motivational regulations were used.

Exercisers' motivation-related outcomes

The 5-item version of the Subjective Vitality Scale (SVS; Ryan & Frederick, 1997) was employed to measure exercisers' feelings of vitality and energy in their everyday life. The scale has demonstrated good internal reliability in previous research (Gunnell et al., 2014). To measure exercisers' attention during class, four items were specifically developed for this project. The stem "I feel that in this class…" preceded all items. Furthermore, three items were specifically written for this project to assess exercisers' intentions to continue their participation in the class.

Instructors' perceptions of their motivational style

Instructors' perceptions of autonomy support, structure, and involvement, as well as controlling behaviors were measured using the same items and rating scales as those employed for exercisers, but with minor amendments to the wording to make the items suitable for instructors.

Instructors' basic need satisfaction

The items for basic need satisfaction developed by Chen et al. (2015) were used to assess the extent to which instructors felt that their basic needs were satisfied when instructing group cycling classes. Instructors responded to four items assessing autonomy, four items measuring competence, and six items assessing relatedness (three tapping feelings of relatedness in relationships with exercisers and three tapping feelings of relatedness with other group exercise instructors).

Instructors' motivation

The Work Extrinsic and Intrinsic Motivation Scale (Tremblay et al., 2009) was used to measure instructors' motivation to teach classes. Following the stem "I work as an indoor group cycling instructor…", instructors responded to 18 items.

Results

Exercisers' responses

Given the large amount of missing data, particularly in the control group, we felt that comparing the exercisers' scores between the two arms would be highly problematic. However, since such comparisons were specified in the protocol paper (Hancox et al., 2015b), we carried them out for transparency reasons. Intention-to-treat (ITT) analysis by carrying forward the last observation is usually recommended in the literature to deal with missing data. However, in studies with large amount of missing data, such as ours, ITT analysis is seriously biased (Salim et al., 2008). In such

cases, Chakraborty and Gu's (2009) simulations showed that the multilevel modeling approach, which uses all available data from each participant, is a far better alternative to ITT analysis.

As specified in the protocol paper, we carried out multivariate multilevel modeling, as opposed to repeated measures MANOVAs, testing the significance of the changes in the mean scores of the exercisers' responses. We used SPSS 22 to set up three-level models, which are appropriate for designs with a small number of fixed occasions, and we followed the recommendations of Lischetzke et al. (2015). Level 1 represented the two measurement waves, level 2 the exercisers, and level 3 the exercise classes. Wave 2 scores of the outcome variables served as the dependent variables. This score was predicted by a dummy variable Post (0 = wave 1, 1 = wave 2), another dummy variable Arm, representing experimental allocation (control = 0, intervention = 1), and the interaction between the two dummy variables. The parameter of interest was the Post × Arm interaction which tested whether the mean difference between the two arms with respect to the post-intervention/pre-intervention score of the dependent variable was significant. The analyses showed no significant interaction effects, aside from predicting exercise intentions ($b = 0.72$; $P < 0.01$), indicating significantly higher changes in the intervention arm.

As explained earlier, we then decided to focus on the within-group changes in the intervention arm only, as the main emphasis of this project was to pilot test our intervention material. For such designs, a control group is not always necessary (Arain et al., 2010). Models were tested as previously, but without the Arm or Post × Arm interaction. Effect sizes are not presented because effect sizes based on change scores in a within-subjects design do not convey the magnitude of an effect because they are confounded with the pretest–posttest correlation (Feingold, 2013). Means and standard deviations are presented in Table 3.

For exercisers' perceptions of instructor interpersonal style, the results showed that instructor use of autonomy support ($b = 0.22$; $P = 0.04$) and interpersonal involvement increased ($b = 0.38$; $P < 0.01$), and use of controlling strategies decreased ($b = -0.33$; $P < 0.01$). No changes were found for structure ($b = 0.21$; $P = 0.08$). For exercisers' psychological need satisfaction, results showed that autonomy ($b = 0.17$; $P < 0.01$) and relatedness ($b = 0.15$; $P = 0.03$) increased, but no significant changes were observed in competence need satisfaction ($b = 0.04$; $P = 0.50$). For exercisers' motivation, no changes were found for autonomous motivation ($b = 0.03$; $P = 0.06$), controlled motivation ($b = 0.04$; $P = 0.16$), or amotivation ($b = 0.08$; $P = 0.05$). For exercisers' motivation-related outcomes, intention to remain in the class increased ($b = 0.37$; $P < 0.01$), but no significant changes were observed in vitality ($b = 0.15$; $P = 0.17$) or attention ($b = -0.04$; $P = 0.53$). Controlling for age, gender or years of experience in indoor cycling classes did not change substantially the size of the observed differences.

Table 3. Descriptive statistics from multilevel models for exerciser data at baseline and end of study

	Intercept (SE)	Mean change (SE)
Perceived instructor behaviors		
Autonomy support	5.67 (0.11)	0.22 (0.11)*
Control	2.80 (0.07)	−0.33 (0.12)**
Structure	5.99 (0.07)	0.21 (0.12)
Involvement	5.42 (0.11)	0.38 (0.13)**
Psychological need satisfaction		
Autonomy	4.14 (0.04)	0.17 (0.06)**
Competence	4.37 (0.03)	0.04 (0.05)
Relatedness	3.73 (0.07)	0.15 (0.07)*
Motivation		
Autonomous	3.49 (0.03)	0.03 (0.01)
Controlled	0.96 (0.06)	0.04 (0.03)
Amotivation	0.18 (0.03)	0.08 (0.04)
Motivation-related outcomes		
Intention	3.46 (.05)	0.37 (0.08)**
Vitality	5.30 (.07)	0.15 (0.10)
Attention	4.35 (.60)	−0.05 (0.07)

The intercept represents the mean score at the beginning of the study. The second column represents the mean difference between the end and the beginning of the study.
*$P < .05$, **$P < 0.01$.

Instructors' responses

For instructors' responses, repeated measures MANOVAs were carried out, as there was only one level in the analysis (see Table 4). Missing data were treated with ITT. The repeated measures MANOVA for self-reported interpersonal style was significant: Pillai's trace = 0.34, $F(4, 25) = 3.28$, $P = 0.03$, partial $\eta^2 = 0.34$. Follow-up univariate analyses showed that the use of controlling strategies decreased over time ($F(1, 28) = 13.56$, $P = 0.01$, partial $\eta^2 = 0.33$). No changes were found for autonomy support ($F(1, 28) = 2.78$, $P = 0.11$, partial $\eta^2 = 0.09$), structure ($F(1, 28) = 0.08$, $P = 0.78$, partial $\eta^2 = 0.003$), or involvement ($F(1, 28) = 1.76$, $P = 0.20$, partial $\eta^2 = 0.06$). For instructors' psychological need satisfaction, the MANOVA was marginally significant: Pillai's trace = 0.92, $F(3, 26) = 97.95$, $P < 0.01$, partial $\eta^2 = 0.92$. Follow-up univariate analyses showed that autonomy need satisfaction ($F(1, 28) = 282.69$, $P < 0.01$, partial $\eta^2 = 0.91$) and relatedness ($F(1, 28) = 6.16$, $P = 0.02$, partial $\eta^2 = 0.18$) increased, but no significant changes were observed in competence ($F(1, 28) = 0.50$, $P = 0.49$, partial $\eta^2 = 0.02$). For instructors' motivation, the

Table 4. Descriptive statistics from repeated MANOVAs for instructor data at baseline and end of the study

	Baseline M (SD)	End of study M (SD)
Instructor behaviors		
Autonomy support	5.78 (0.61)a	5.94 (0.57)a
Control	2.63 (0.70)a	2.10 (0.56)b
Structure	5.61 (0.64)a	5.64 (0.89)a
Involvement	6.28 (0.88)a	6.44 (0.65)a
Psychological need satisfaction		
Autonomy	4.14 (0.50)a	5.94 (0.57)b
Competence	4.35 (0.47)a	4.31 (0.49)a
Relatedness	3.93 (0.45)a	4.09 (0.40)b
Motivation		
Autonomous	4.22 (0.46)a	4.21 (0.56)a
Controlled	3.01 (0.72)a	2.80 (0.71)a
Amotivation	1.67 (0.83)a	1.67 (0.80)a

Means sharing the same alphabet in the same row do not differ significantly at $P < 0.05$.

MANOVA was not significant: Pillai's trace = 0.16, $F(3, 25) = 1.57$, $P = 0.22$, partial $\eta^2 = 0.16$.

Discussion

The aim of this study was to pilot test the effects of a communication training program designed for group exercise instructors that uses principles from SDT and behavior change techniques. Besides making methodological and conceptual contributions to the exercise promotion literature (as outlined in the introduction), the study aimed to bridge an important gap between theory and practice. That is, while contemporary motivational theories have advanced our understanding of how to effectively support behavior change, such advances do not typically feed through in the development of exercise instructor training programs. This is also the case in continuous professional development programs in other domains (e.g., education) which often fail to translate contemporary theories and models to daily educational practice (Armour and Makopoulou (2012), Slingerland et al., in press).

The changes from baseline found in the experimental arm for both exercisers and instructors are promising. With regard to exercisers, the results show increases in perceptions of adaptive instructor behaviors (more autonomy support and interpersonal involvement), psychological need satisfaction (higher autonomy and relatedness), and stronger intentions to participate in future group cycling classes. These findings align well with similar intervention studies in the exercise domain (e.g., Fortier et al., 2007; Edmunds et al., 2008) and other settings (e.g., Cheon & Reeve, 2015) and provide further evidence regarding the benefits of a SDT-based intervention in terms of exercisers' motivation-related responses. The reduction in perceived maladaptive (i.e., controlling) instructional behaviors in conjunction with the increases in adaptive types of instructional behaviors is particularly encouraging as empirical evidence indicates that the two broad types of behavior are fairly independent (e.g., Bartholomew et al., 2009), and hence being able to change both maximizes the benefits of the training. This is the first study in the exercise/fitness domain which shows that SDT-based communication training can change perceptions of the degree of both adaptive and maladaptive behaviors displayed by fitness instructors.

The changes in other variables were not significant and there are various possible reasons for this. In terms of the dimension of structure, it should be noted that RPM indoor cycling classes are highly structured with class music and associated choreography provided by the headquarters of the company, hence there is very limited room for changes. However, structure in the SDT literature also refers to competence support by others, and hence the lack of significant changes could reflect either that the participants already felt competent (as indicated by their mean competence satisfaction score) and/or that changes in our training program are needed to more effectively target this component of adaptive communication style. With regard to motivational regulations, given that the sample was healthy individuals who paid to participate in the classes, there were strong ceiling (for autonomous motivation) and floor (for controlled motivation and amotivation) effects. In addition, no changes were found for vitality and attention in the class. In terms of vitality, perhaps this variable is less suitable for regular exercisers and may be more important to assess in exercise interventions with physically inactive individuals who experience increased vitality as a result of becoming more active. For in-class attention, due to the fast-paced nature of indoor cycling, heightened concentration is constantly needed in order to keep up with the rest of the class, and hence such variable is, in hindsight, not likely to change significantly over time.

We also explored the effects of the training program on the instructors. There is evidence to suggest that individuals trained to adopt a SDT-based communication style also benefit from the training. For example, teachers reported being more autonomously motivated, more efficacious, and having higher well-being after receiving SDT-based training (Cheon et al., 2014). Such effects have not been tested among exercise instructors. Similar to Cheon et al. and others (e.g., Deci et al., 2006), we found that trained instructors reported less controlling behaviors, and higher levels of autonomy and relatedness need satisfaction, following their training.

No significant differences were found for the instructor reports of their use of the adaptive aspects of the communication style and their own motivation to instruct. With regard to autonomy support, involvement, and controlled motivation, the trend of change was in the right direction and the associated effect sizes were moderate to large, but the relatively small number of instructors is a likely reason for the lack of statistical significance of the changes. For structure, we provided explanations earlier. With regard to competence need satisfaction, autonomous motivation and amotivation, the lack of significant changes could be due to ceiling and floor effects, respectively. It is also possible that other factors that we did not measure (e.g., perceived cultural norms associated with what effective instruction is, beliefs about the effectiveness of training; Cheon & Reeve, 2015) could be potential explanations for the non-significant changes.

A challenge that we faced in this trial was to recruit and retain a sufficient number of instructors and exercisers in the control arm. To a large extent this was due to the geographical isolation of Perth, Australia, as there was a limited pool of RPM instructors to draw from. Recruiting from other Australian states via online means of communication involved a much less personal interaction which was problematic in terms of long-term commitment to the program. To some extent, this is not a major setback for our study as this was an exploratory study that aimed to test the face-to-face and online training materials. However, in terms of designing a viable RCT in the future, it is imperative that a multisite RCT is designed across several states to facilitate randomization, enhance the personal interaction, and retention of participants in the control arm. Furthermore, such a study should offer a delayed treatment arm so that all instructors benefit from the training and remain committed to the study. In addition, the training could be extended to include other types of exercise classes. Such options were not possible in the current study due to funding constraints and logistical issues. The attrition in the exercisers could be due to a number of reasons (besides the fact that we were only able to contact again exercisers whose instructors did not drop out from the study). First, exercisers are not assigned to set classes each week and they can pick and choose which classes they attend. Second, we recruited from a large mining Australian state that had large numbers of fly-in–fly-out workers, that is, workers who fly regularly to remote areas in Australia to work in the mining industry. Third, the intervention was delivered over Christmas/summer holidays, a time of year when typical routines are disrupted. Hence, following up exercisers across the two measurement waves was logistically very difficult. A future RCT should consider all these logistical issues. A further logistical issue is that we have only self-reports of the type of training activities the participants completed online, but not objective records of how many times each instructor accessed the online material and to the extent they interact with it. This should be addressed in a future RCT by developing tools to monitor engagement in online activities.

Another consideration to extend this pilot work, and at the same time a challenge for future work, would be to attempt to recruit and train fitness instructors (and exercisers) who have a less adaptive motivation profile than the profiles of those we recruited in our study. It is possible that the instructors attracted to this project were those who already shared some of the underlying philosophy of the program and already attempted to implement this type of communication style. A sample of instructors with more diverse approaches to motivate others could be attracted via, for example, assigning continuous professional development points to those who agree to undertake a motivation training program such as ours.

Perspectives

A number of promising findings emerged in relation to the training of both the exercisers and the instructors. At the same time, a number of methodological challenges were identified which will inform the design of a future RCT. Our findings contribute to the growing evidence with regard to the motivational benefits of implementing SDT-based interventions (e.g., Edmunds et al., 2008; Cheon et al., 2014; Cheon & Reeve, 2015) in the exercise/fitness sector working with non-clinical populations where the greatest gap is in terms of available empirical evidence. One noteworthy contribution of our work was the combination of SDT-based communication training with the implementation of specific behavior change techniques from the refined CALO-RE taxonomy. Future research in exercise and other life domains would do well to test the optimal number and mix of behavior change techniques that can complement and enhance the effectiveness of SDT-based communication training.

Key words: Need support, exercise motivation, motivation training.

Acknowledgements

This work was funded by a research grant awarded by Les Mills International. The authors sincerely thank Zahra Hilton and Mark Shepherd for assisting with data collection.

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