

TRAINING PLAN ELEMENTS AS PREDICTORS OF EXERCISE MOTIVATION: A CROSS-SECTIONAL STUDY

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Abstract: Motivation is a key determinant of sustained engagement in physical exercise; however, the influence of training plan elements on specific motivational dimensions remains insufficiently understood. This study aimed to examine the influence of training plan elements on motivation to exercise. A two-month cross-sectional study was conducted on a total sample of 1,087 participants from fitness centres in the Banja Luka region. Two sets of variables were applied: the first set, a self-developed questionnaire, was used to describe training plan elements such as training level, training mode, training structure, prescribed training plan, training type, training breaks, training frequency, and training volume, including the personal variable of gender; and the second set consisted of the EMI-2 questionnaire (Markland & Ingledew, 1997). The EMI-2 scale comprises 14 subscales: Social Recognition, Health Pressures, Competition, Weight Management, Affiliation, Challenge, Appearance, Stress Management, Ill-Health Avoidance, Nimbleness, Enjoyment, Strength and Endurance, Revitalisation, and Positive Health. Multiple regression analysis was performed to examine the predictive influence of training plan elements on the EMI-2 subscales. Overall, training type and training mode emerged as consistent positive predictors, whereas training level and structure functioned as a negative predictor, highlighting the complex and multidirectional relationship between training plan elements and exercise motivation.

Keywords: training plan, exercise, motivation, fitness

INTRODUCTION

Fitness and healthy lifestyles are the worldwide trends and have become more popular all over the world (Chekhovska, 2017). Exercise represents a key element of them, while Caspersen, Powell, and Christenson (1985) defined it as a planned and systematic activity that includes repetitive movements aimed at maintaining or improving one or more fitness components. Wackerhage and Schoenfeld (2021) state that a training plan, or exercise prescription, represents the point at which sport and exercise science is translated into practice; that is, a training plan or exercise prescription typically comprises a combination of multiple interacting elements, such as training mode, training level, training structure, training type, training breaks, and/or training load.

Motivation can be defined as the degree of determination, drive, or desire with which an individual approaches or avoids a behavior (Mears & Kilpatrick, 2008). Therefore, exercise motives are considered as essentially intrinsic (e.g., seeking affiliation, personal growth, enjoyment and health) as those viewed to be more nearly related to the satisfaction of basic psychological needs, or extrinsic (e.g., social recognition, appearance) those typically are not truly or universally essential to well-being and personal growth (Weman-Josefsson, Lindwall, & Ivarsson, 2015). Ryan and Deci (2007) state that the self-determination theory (SDT) provides a useful theoretical basis for research of motivation and behaviors that lead to exercise, based on the fact that it is triggered by various reasons, experiences, and/or consequences, as differences between intrinsic (autonomous) motivation (e.g., for enjoyment, interest, and challenge) and extrinsic (controlled) motivation (e.g., gain a social reward or avoid disapproval), which is also constructed from four parts: external regulation (behavior controlled by obtaining external rewards or avoid punishments), introjected regulation (doing an activity to avoid internal pressure and self-esteem-related contingencies), identified regulation (recognition of the value of a behavior), and integrated regulation (engagement in a behavior because it is consistent with the person's core values and beliefs). So, these statements make motivation for exercise an interesting sphere for research, but without the application of an adequate measuring instrument that is impossible. Thus, Markland and Ingledew (1997) developed the Exercise Motivations Inventory–2 (EMI-2) scale.

There is a lack of studies that indicate the application of the EMI-2 questionnaire to the fitness population, as most studies (Cho & Beck, 2016; Ednie & Stribor, 2017; Kulavic, Hultquist, & McLester, 2013) indicate the application of the questionnaire to the university population. Other studies (Vuckovic, Cuk, & Duric, 2023; Vuckovic & Durić, 2024) were conducted with the aim of investigating motivational factors for exercise in relation to the socio-demographic data and status of the participants. Therefore, it is necessary to establish the relationship between the training plan elements and the motivation for exercise.

The aim of this study is to examine the influence of the training plan elements on the motivation to exercise.

METHOD

Participants

The survey was administered in the fitness centres and fitness groups of the Banjaluka region (cities Banjaluka and Laktaši), on a total sample of 1,087 participants. Of the total sample, 339 (31.2%) were male and 748 (68.8%) were female. The average age of participants was 31.23 ± 10.79 years, and the age range was from 13 to 75 years.

Measures

In researching the impact of training plan elements on exercise motivation, two sets of variables were applied. The first set, self-developed questionnaire was used to collect data on the descriptive characteristics of the respondents and the elements of the training plans they implemented. The open-ended questions referred to personal information such as age, and educational level, while the remaining questions were closed-ended and related to the elements of the training plan followed by the respondents. The closed-ended questions addressed the following variables: gender, training level, training mode according to the number of participants in the training session, training structure according to the parts of the training, prescribed training plan, training type according to the type of exercise that predominates during training, training breaks, training frequency, and training volume.

The EMI-2 (Markland & Ingledew, 1997), was used to assess exercise motivation, while for the purposes of this study, the Serbian version of the EMI-2 questionnaire (Janković & Tubić, 2025) was used. The EMI-2 scale comprises 14 subscales, each consisting of three or four items. The subscales of the EMI-2 questionnaire are Social Recognition, Health Pressures, Competition, Weight Management, Affiliation, Challenge, Appearance, Stress Management, Ill-Health Avoidance, Nimbleness, Enjoyment, Strength and Endurance, Revitalisation, and Positive Health. The scores derived from these subscales constituted the second set of variables in the present study and were measured using a six-point Likert scale ranging from 0 ('Does not apply to me at all') to 5 ('Applies to me very much'). The Serbian version of the EMI-2 demonstrated good internal consistency reliability, with Cronbach's alpha coefficients for the subscales ranging from 0.606 to 0.850 and an overall internal consistency coefficient of 0.932 (Janković & Tubić, 2025).

Procedure

Data collection was carried out using the survey method, according to the principle of paper-pencil format. In the Banja Luka region, verbal agreement for conducting the survey among clients was obtained from the owners, managers, and/or leaders of gyms, fitness centres, studios, and/or fitness groups, who were instructed to distribute the questionnaires to their clients. Clients were instructed to complete the questionnaires immediately upon arrival, before the start of their training session, and to return the completed questionnaires to the person from whom they had received them. Individuals authorised to distribute the questionnaires were instructed to return all completed questionnaires to the researcher. The study was approved in advance by the Decision of the Bodybuilding and Fitness Association of the Republic of Srpska, Banja Luka (No. 104-01/2024, dated October 14, 2024), and it lasted over a two-month period from October 15 to December 15. All participants voluntarily provided written informed consent prior to participation.

Statistical analyses

Descriptive statistics included frequencies, mean, standard deviation, and range to describe the participants, and rank, mean, standard deviation, skewness, and kurtosis to describe the EMI-2 subscales. Multiple regression analysis was performed to examine the predictive influence of training plan elements on the EMI-2 subscales. All statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS Statistics 20; IBM, Armonk, NY, USA).

RESULTS

Table 1 indicates the values for the descriptive statistics of the EMI-2 subscales.

Table 1. Descriptive Statistics of the EMI-2 Subscales

EMI-2 subscales	Rank	M±SD	Skewness	Kurtosis
Stress Management	7	3.71±1.13	-1.09	0.87
Revitalisation	2	4.42±0.74	-1.85	4.70
Enjoyment	4	4.09±1.01	-1.38	1.72
Challenge	9	3.57±1.24	-0.90	0.25
Social Recognition	14	1.56±1.43	0.64	-0.68
Affiliation	10	3.32±1.24	-0.48	-0.56
Competition	12	2.45±1.36	0.09	-0.92
Health Pressures	13	1.71±1.43	0.52	-0.72
Ill-Health Avoidance	6	3.99±1.04	-1.20	1.26
Positive Health	1	4.54±0.71	-2.12	5.73
Weight Management	11	3.29±1.29	-0.51	-0.62
Appearance	8	3.67±1.18	-0.98	0.54
Strength & Endurance	3	4.20±0.93	-1.50	2.38
Nimbleness	5	4.06±1.08	-1.31	1.45

Note. M- mean; SD- standard deviation

Table 1 shows the results of the EMI-2 subscales. In the range of mean and standard deviation values from the lowest to the highest, the order is as follows: Social Recognition, Health Pressures, Competition, Weight Management, Affiliation, Challenge, Appearance, Stress Management, IllHealth Avoidance, Nimbleness, Enjoyment, Strength & Endurance, Revitalisation, and Positive Health. The distribution is approximately normal except for the Positive Health subscale, which indicates a deviation (negative skewness). Table 2 indicates the results of the multiple regression analysis for the training plan elements and the EMI-2 subscales.

Table 2. The multiple regression analysis for the training plan elements and the EMI-2 subscales

	SM	Re	En	Ch	SR	Aff	Co	HP	I-HA	PH	WM	App	S&E	Ni
	β	β	β	β	β	β	β	β	β	β	β	β	β	β
Gender	.110*	.097*	.063	.034	-.110*	-.015	-.119*	-.057	.067	.138*	.067	.077*	.022	.085*
Training level	-.017	-.051	-.084*	-.155*	-.142*	-.034	-.182*	-.004	.018	.007	-.020	-.079*	-.090*	-.073*
Training mode	.061	.108*	.147*	.002	.008	.244*	.146*	.074	.088*	.041	-.003	-.075	.012	.081
Training structure	.019	-.089*	-.058	-.041	.017	.003	.017	-.064*	-.074*	-.068*	-.071*	-.049	-.042	-.093
Prescribed training plan	-.021	-.061	-.073	.024	.066	.053	.003	.073	.002	-.001	.052	-.021	-.029	.036
Training type	.067*	.065*	.017	.077*	.012	.022	.055	.038	.081*	.094*	.045	-.020	-.026	.134*
Training break	.036	.067*	.014	-.022	.017	.083*	.046	.000	.005	.006	-.091*	-.065*	-.019	-.065*
Training frequency	.023	.110*	.161*	.094*	.102	.088*	.127*	-.109*	-.014	.059	.060	.129*	.177*	.028
Training volume	.017	.015	.122*	.053	-.059	.078*	.021	-.040	-.079*	-.018	-.101*	-.060	.025	-.014

Note. SM-Stress Management; Re-Revitalisation; En-Enjoyment; Ch-Challenge; SR-Social Recognition; Aff-Affiliation; Co-Competition; HP-Health Pressures; I-HA-Ill-Health Avoidance; PH-Positive Health; WM-Weight Management; App-Appearance; S&E-Strenght & Endurance; Ni-Nimbleness; β- standardized coefficient; *- p≤05

The multiple regression analysis presented in the Table 2 indicates how gender and the elements of the training plan, as predictors, influence exercise motivation as measured by the EMI-2 subscales. Statistical significance was established at $p \leq .05$.

The results indicate that the prescribed training plan has no predictive significance for exercise motivation. In contrast, positive predictive significance was observed for gender and training type in relation to Stress Management; for gender, training mode, training type, training breaks, and training frequency in relation to Revitalisation; for training mode, training frequency, and training volume in relation to Enjoyment; for training type and training frequency in relation to Challenge; for training structure, training breaks, training frequency, and training volume in relation to Affiliation; for training mode and training frequency in relation to Competition; for training mode and training type in relation to Ill-Health Avoidance; for gender and training type in relation to Positive Health; for gender and training frequency in relation to Appearance; for training frequency in relation to Strength and Endurance; and for gender and training type in relation to Nimbleness.

Significant negative predictive effects were observed for training structure in relation to Revitalisation; for training level in relation to Enjoyment and Challenge; for gender and training level in relation to Social Recognition and Competition; for training structure and training frequency in relation to Health Pressures; for training structure and training volume in relation to Ill-Health Avoidance; for training structure in relation to Positive Health; for training structure, training breaks, and training volume in relation to Weight Management; for training level and training breaks in relation to Appearance; for training level in relation to Strength and Endurance; and for training level and training breaks in relation to Nimbleness.

DISCUSSION

This study examined the effects of training plan elements on exercise motivation. The findings demonstrate that specific elements of a training plan differentially influence motivation to exercise. The source of the training plan—whether self-designed, obtained online, or provided by a trainer or fitness instructor—did not predict exercise motivation. In contrast, other elements exhibited either positive or negative associations with motivation. Notably, the training model and type of training emerged exclusively as positive predictors, whereas the level of training was identified as a negative predictor of exercise motivation.

Ednie and Stribor (2017) reported that gender was positively associated with exercise motivation, particularly in relation to Stress Management. The present findings are consistent with this observation, as gender demonstrated a positive association with Stress Management. In addition, gender was positively associated with Revitalisation, Weight Management, Strength and Endurance, and Nimbleness, while negative associations were identified for Social Recognition and Competition. Previous research (Cho & Beck, 2016; Boone & Brausch, 2016; Ednie & Stribor, 2017) suggested that Social Recognition and Competition are more pronounced among males; the negative regression coefficients observed in the present analysis indicate that these motives vary according to gender.

Vuckovic, Cuk, and Duric (2023) identified Revitalisation, Positive Health, and Appearance as salient motivators. In the current study, gender was positively associated with Revitalisation and Weight Management, whereas no significant association was observed for Positive Health. Al Salim (2024) reported a positive contribution of Nimbleness irrespective of gender; correspondingly, Nimbleness was positively associated with gender in the present model.

Kilpatrick, Hebert, and Bartholomew (2005) found that Appearance and Nimbleness could be negatively associated with motivation. In the current analysis, Appearance was negatively associated with training break, whereas Nimbleness showed a negative association with training level. Ball, Bice, and Perry (2014) emphasised Social Recognition among athletes; however, in the present results, Social Recognition was negatively associated with gender and training level. Frederick and Ryan (1993) identified Enjoyment as a primary motivator for sport participants; in the current model, Enjoyment was positively associated with training mode and training frequency, but negatively associated with training level.

Tsaur, Lin, and Cheng (2015) conceptualised Challenge as context-dependent. In the present findings, Challenge was positively associated with training type and training frequency, and negatively associated with training level. Finally, although Vuckovic and Duric (2024) reported generally positive predictive effects of motivational factors regardless of training mode, the current multivariate results indicate that several predictors demonstrated both positive and negative regression coefficients across different EMI-2 subscales.

The ACSM Guidelines for Exercise Testing and Prescription describe a standard session as comprising three phases: warm-up, conditioning, and cool-down. Research indicates that many exercisers neglect proper implementation of these phases, often underestimating the value of warm-up and cool-down (Vaidahazan, Hantiu, & Staicu, 2016). Warm-up routines have been shown to reduce injury risk (Nuhu et al., 2021) and alleviate exercise-related discomfort (Oh, 2013), whereas cool-down exercises contribute to improvements in general and specific motor skills (Lee, Yoon, Song, & Oh, 2021). In the present regression analyses, poorly structured sessions were associated with lower motivation in health-related domains, suggesting that inadequate planning can negatively predict these outcomes, even after accounting for other variables. Conversely, well-structured sessions were positively linked to affiliation, implying that organised training may foster social engagement within exercise communities. It is important to note that these findings reflect predictive associations in a cross-sectional design and should not be interpreted as evidence of causality.

Campos et al. (2022) reported that exercisers, regardless of training type, tended to score higher on motivational measures than non-exercisers. Consistent with these findings, the training type in the current study accounted for a significant positive proportion of variance in exercise motivation, indicating its role as a positive predictor within a multivariate context. Albulescu et al. (2022) demonstrated, through meta-analysis, that breaks—irrespective of their type or duration—positively influence performance, reduce fatigue, and increase vigour. In the present analysis, appropriately timed breaks were positively associated with revitalisation and affiliation, whereas poorly planned breaks were negatively related to nimbleness. This suggests that the motivational impact of rest intervals depends on how they are integrated into the broader training structure rather than their mere inclusion.

Motivation has also been strongly linked with exercise frequency, which contributes to the organisation of exercise behaviour (Costa, Oliva, & Cuzzocrea, 2014). Bycura, Feito and Prather (2017) found training frequency to be positively correlated with revitalisation, affiliation, competition, and challenge, while showing only a negligible negative association with health pressures. In the present regression model, health pressures retained a small negative coefficient, suggesting that, when other motivational factors are considered, they negatively predict overall exercise motivation. Duncan et al. (2010) highlighted the role of training volume in supporting integrated regulation. Similarly, in the current study, training volume was positively associated with affiliation and enjoyment, though its predictive contribution decreased when intrinsic motivational dimensions were considered together, indicating some overlap in explanatory power. Finally, Martinez, Gillespie and Bale (2014) noted that individuals with higher body mass indexes often exercise for weight management and illness prevention. In line with this, inadequately programmed training volume in the present study was negatively associated with motivation when specific weight-related objectives were not met, underscoring the importance of tailoring volume to participants' goals to sustain motivation.

The strengths of this study lie in its large sample of the fitness population and the use of a standardised questionnaire tailored to the specific context and speaking area in which the research was conducted. A particular advantage of the study is that the independent variables were defined as elements of the training plan, whereas in other studies these variables are typically limited to participants' socio-demographic characteristics. The primary limitation is the absence of the researcher during questionnaire completion, which may have compromised adherence to the study protocol and methodology.

The practical significance of this study lies in its demonstration of how elements of the training plan influence exercise motivation. The findings can inform the design of training programmes to ensure that they do not negatively affect individuals' motivation to exercise.

Recommendations for future research include ensuring the presence of researchers during questionnaire completion, conducting a longitudinal study across the whole of Republika Srpska, and investigating exercise motivation within the context of a precisely structured training programme.

CONCLUSION

The findings of this study demonstrate that different elements of the training plan exert varying influences on exercise motivation. While most elements may act as either positive or negative predictors, the training mode and type of training consistently serve as positive predictors, whereas the training level and training structure emerge as a negative predictor. These results highlight the importance of carefully structuring training programmes to optimise motivation among exercisers.

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