

The Relationship Between Exercise Motives and Psychological Well-Being

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ABSTRACT. The aim of the present study was to use the self-determination model of exercise motives to examine the relationship between extrinsic and intrinsic motives for exercise and a number of measures of psychological well-being. Undergraduate students purporting to exercise regularly ($N = 227$; 102 men, 125 women) were split into 2 groups: those exercising for less than 6 months and those exercising for 6 months or more. The respondents were asked to complete measures of exercise motivation, self-esteem, psychological well-being, and stress. Among individuals exercising for less than 6 months, a number of extrinsic motivations for exercise were significantly related to poorer psychological well-being. Among individuals exercising for 6 months or more, a number of intrinsic motivations were significantly related to better psychological well-being. The present findings suggest that researchers can use self-determination theory to understand the relationship between exercise motivation and psychological well-being.

Key words: exercise, motivation, self-esteem, stress

MARKLAND AND INGLEDEW (1997) introduced an improved measure of exercise motivation, Exercise Motivations Inventory 2 (EMI-2), to furnish additional theoretical propositions that distinguish between intrinsic and extrinsic motives for exercise. The EMI-2 contains 14 subscales and provides a comprehensive measure of exercise motivation; it focuses on internal (revitalization, enjoyment) and external (appearance) motivations. However, Markland and Ingledew argued that the scale reflects less conventional aspects of exercise motivation (e.g., social recognition) that relate to both internal and external aspects of exercise motives. Markland and Ingledew used Deci and Ryan's (1985, 1990) self-determi-

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nation theory to extend the view that exercise may sometimes represent behavioral regulation. Within this perspective, individuals who have extrinsic reasons for beginning to exercise may eventually develop intrinsic motivations to exercise over time because their motives have become internalized.

The benefits of exercise to psychological well-being have been well documented. In particular, exercise is thought to reduce depression (Bybee, Zigler, Berliner, & Merisca, 1996; Craft & Landers, 1998; Rief & Hermanutz, 1996; Steptoe, Lipsey, & Wardle, 1998) and stress (Bundy, Carroll, Wallace, & Nagle, 1998; Kerr & VandenWollenberg, 1997; Rodgers & Gauvin, 1998; Steptoe et al., 1998; Stetson, Rahn, Dubbert, Wilner, & Mercury, 1997) and to heighten self-esteem (Asci, Kin, & Kosar, 1998; DuCharme, Bray, & Brawley, 1998; Loland, 1998; Rodgers & Gauvin, 1998) and general health (Daley & Parfitt, 1996; Szabo, Mesko, Caputo, & Gill, 1998). Furthermore, some authors have argued that there is a significant relationship between exercise motives and psychological well-being. Extrinsic motives for exercise are thought to lead to stress in individuals, whereas intrinsic motives for exercise are thought to lead to a release of stress (Bakker, Whiting, & van der Brug, 1997; Markland & Ingledew, 1997). Causal relationships between feelings of stress and poorer psychological well-being and between the release of stress and better psychological well-being suggest a relationship between exercise motives and psychological well-being—that is, that extrinsic motivations for exercise will result in poorer psychological well-being and intrinsic motivations for exercise will lead to better psychological well-being (Markland & Ingledew, 1997).

Within self-determination theory, the motivation to exercise is thought to alter over time, suggesting that the relationships between exercise motives and their correlates, such as psychological well-being, may be best considered over time. However, at present, there are no data that enable researchers to combine the recently developed EMI-2 (which is thought to reflect aspects of self-determination theory) and self-determination theory to examine the relationship between exercise motivations and psychological well-being. More specifically, exercise motivations are thought to change over time. Therefore, the benefits to psychological well-being of intrinsic exercise motives may only become apparent among those individuals who have been exercising for a long period of time.

Similarly, the relationship between extrinsic motives for exercise and poorer psychological well-being will be most apparent in individuals who have been exercising for a shorter period of time. Therefore, one can predict that, in the short-term, extrinsic exercise motives will be accompanied by poorer psychological well-being, whereas in the longer term, intrinsic exercise motives will be accompanied by better psychological well-being. Our aim in the present study was to examine the self-determination model and its predicted relationship with psychological well-being by comparing extrinsic and intrinsic motives with measures of psychological well-being, making the distinction between individuals exercising for shorter and longer periods of time.

Method

Participants

Five hundred fifty-six undergraduate students (252 men, 304 women), ages 18–42 ($M = 28.3$, $SD = 5.3$) responded to the survey. Consistent with Markland and Ingledew (1997), we included only those respondents who purported to exercise regularly ($N = 227$; 102 men, 125 women). Regular exercise was defined as exercising (e.g., swimming, jogging, weight training, aerobics) at least two to three times per week or participating in sports (e.g., golf, hockey, football) at least two to three times per week. A preliminary item on the survey asked the participants how many years and months they had been exercising regularly up to the present day. In further concordance with Markland and Ingewood (1997), a median split of two subsamples was formed; the first comprised individuals exercising for less than 6 months ($n = 102$), and the second comprised individuals exercising for 6 months or longer ($n = 125$).

Questionnaires

The respondents were asked to complete four questionnaires. The EMI-2 (Markland & Ingledew, 1997) includes 51 items measuring 14 motives for exercising: Stress Management, Revitalization, Enjoyment, Challenge, Social Recognition, Affiliation, Competition, Health Pressures, Ill-Health Avoidance, Positive Health, Weight Management, Appearance, Strength & Endurance, and Nimbleness. Each of the scales from the EMI-2 demonstrates good internal reliability, ranging from .69 to .95, and there is strong support for the factorial validity of the instrument and invariance of the factor structure across gender (Markland, in press; Markland & Ingledew, 1997).

The 12-item general Self-Esteem subscale of the Self-Description Questionnaire III (SDQIII; Marsh, 1990) was modified from the original Rosenberg Self-Esteem Scale (Rosenberg, 1965). Both the manual for the SDQIII (Marsh, 1990) and two reports on the reliability and validity of the scale (Hunter & Stringer, 1993; Maltby, 1995) suggest confidence for using the scale with the present sample. Higher scores on this variable indicate a higher level of self-esteem.

We also used the 28-item version of the General Health Questionnaire (Goldberg & Williams, 1991). Factor analytic examination of the items within the General Health Questionnaire suggested four subscales: Somatic Symptoms, Anxiety/Insomnia, Social Dysfunction, and Severe Depression. Higher scores on each of these subscales indicate poorer psychological well-being on each of these traits.

The Hassles Scale contained within the Hassles and Uplifts Scales (Lazarus & Folkman, 1989) measures eight different aspects of stress. The scales were devised from a factor analysis of hassle statements rated within a particular time

frame (either the past month, past week, yesterday, today, or other) and suggest hassles surrounding Future Security, Time Pressures, Work, Household Responsibilities, Health, Inner Concerns, Financial Responsibilities, and Neighborhood and Environment. For the present study, the respondents were asked to rate hassles within the time frame of the past week.

Results

Satisfactory internal reliability statistics (Cronbach, 1951) above $\alpha = .71$ were found for all the scales. These findings are consistent with the psychometric properties reported by the respective scales' authors (Goldberg & Williams, 1991; Lazarus & Folkman, 1989; Markland & Ingledew, 1997; Marsh, 1990). Table 1 contains the mean and standard deviation scores on each of the subscales of the EMI-2 by individuals exercising for less than 6 months and individuals exercising for 6 months or more.

Those individuals exercising for more than 6 months scored significantly higher on Stress Management, Enjoyment, and Challenge exercise motives than those exercising for less than 6 months. Furthermore, those individuals exercising for less than 6 months scored significantly higher on Social Recognition,

TABLE 1
Means and Standard Deviations for Scores on Each Subscale of the Exercise Motivation Inventory 2, by Individuals Exercising < 6 Months and $\geq$ 6 Months

Subscale	Exercising < 6 months <i>n</i> = 102		Exercising $\geq$ 6 months <i>n</i> = 125		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Stress Management	2.20	1.5	2.94	1.2	-4.22*
Revitalization	2.78	1.3	3.06	1.0	-1.87
Enjoyment	2.21	1.5	2.77	1.3	-3.06*
Challenge	1.67	1.1	2.34	1.3	-4.11*
Social Recognition	1.35	1.4	0.85	1.1	3.00*
Affiliation	1.99	1.4	1.33	1.2	3.87*
Competition	1.75	1.7	1.06	1.5	3.23*
Health Pressures	1.23	1.4	0.98	1.4	1.58
Ill-Health Avoidance	2.87	1.3	2.89	1.4	-.13
Positive Health	3.57	1.3	3.53	1.3	.22
Weight Management	2.59	1.3	2.97	1.5	-1.88
Appearance	1.74	1.6	2.13	1.5	-1.88
Strength	2.59	1.4	2.67	1.3	-.41
Nimbleness	2.89	1.5	2.85	1.3	.20

* $p < .01$.

Affiliation, and Competition exercise motives than those exercising for 6 months or more. These differences are consistent with the view that exercise motives change over time and that persons exercising for longer periods of time will demonstrate intrinsic (stress management, enjoyment, and challenge) rather than extrinsic (social recognition, affiliation, and competition) motives for exercising.

Because of these differences between intrinsic and extrinsic motives for exercising by period of time spent exercising, we computed Pearson product-moment correlation coefficients between exercise motives and psychological well-being, using the distinction between individuals exercising for less than 6 months and those exercising for 6 months or more. Table 2 contains the Pearson product-moment correlations computed between the exercise motives measures and the Self-Esteem scale and subscales of the General Health Questionnaire. Pearson product-moment correlation coefficients were computed between the EMI-2 and the Hassles Scales. Table 3 contains the Pearson product-moment correlations that were computed between the exercise motives measures and the Time Pressures, Work, Health, and Inner Concerns subscales of the Hassles Index by those individuals exercising for less than 6 months and by those exercising for 6 months or more. No significant relationships were found between exercise motives and the remaining subscales of the Hassles Index (Future Security, Household Responsibilities, Financial Responsibilities, Neighborhood and Environment).

A number of significant correlations occurred between the exercise motives and psychological well-being measures. In comparing the subsamples (created by distinctions in length of exercise), we found a consistent pattern regarding a number of measures of exercise motives and the measures contained within the General Health Questionnaire and the Self-Esteem subscale of the SDQIII, which is consistent with the predictions expected within self-determination theory. Among the participants who had been exercising for less than 6 months, higher scores on extrinsic exercise motives (Social Recognition, Affiliation, Competition, Appearance) were accompanied by higher scores on Somatic Symptoms, Anxiety, Social Dysfunction, Depression and lower scores on the Self-Esteem subscale. Furthermore, among the participants who had been exercising for 6 months or more, higher scores on some of the measures of intrinsic exercise motives (Revitalization, Enjoyment, Challenge) were accompanied by lower scores on Somatic Symptoms, Anxiety, Social Dysfunction, and Depression and higher scores on the Self-Esteem subscale.

The pattern of these correlations is partly replicated with some of the measures of stress. Among these correlations, higher levels of Time Pressure, Health, and Inner Concerns measures of the Hassles Scale shared a significant positive association with aspects of extrinsic exercise motives (Affiliation, Competition, Social Recognition) among those individuals exercising for less than 6 months. Furthermore, a significant negative correlation occurred between higher levels of Time Pressure, Health, and the Inner Concerns measures of the Hassles Scale and

TABLE 2
Pearson Product-Moment Correlations Computed Between the Exercise Motives Measures and the Self-Esteem Scale, and the
Subscales of the General Health Questionnaire for Individuals Exercising < 6 Months and Those Exercising ≥ 6 Months

Scale	Self-Esteem		Somatic Symptoms		Anxiety, Insomnia		Social Dysfunction		Severe Depression	
	< 6 months (n = 102)	≥ 6 months (n = 125)	< 6 months (n = 102)	≥ 6 months (n = 125)	< 6 months (n = 102)	≥ 6 months (n = 125)	< 6 months (n = 102)	≥ 6 months (n = 125)	< 6 months (n = 102)	≥ 6 months (n = 125)
Stress Management	-.20*	.23**	.23*	-.30**	.34**	-.26**	.22*	-.20*	.20*	-.19*
Revitalization	.02	.34**	-.07	-.28**	-.01	-.34**	.12	-.33**	.02	-.26**
Enjoyment	.07	.26**	.15	-.31**	.10	-.35**	.08	-.29**	-.06	-.25**
Challenge	.11	.29**	-.06	-.27**	.08	-.24**	.06	-.30**	-.03	-.25**
Social Recognition	-.33**	.12	.31**	.01	.32**	.17*	.27**	-.30**	.28**	.13
Affiliation	-.24**	.15	.29**	.02	.26**	.07	.33**	.02	.34**	-.02
Competition	-.26**	.14	.26**	.01	.24**	.06	.24**	.04	.29**	.04
Health Pressures	-.32**	.12	.22*	-.08	.28**	-.15	.10	-.30**	.27**	-.15
Ill-Health Avoidance	.04	.17*	.09	-.15	-.15	-.16	.08	-.23**	-.01	-.28**
Positive Health	-.03	.34**	-.11	-.34**	.16	-.34**	.09	-.33**	.04	-.26**
Weight Management	-.28**	.10	.15	-.08	.22*	-.06	-.12	-.26**	.05	-.11
Appearance	-.26**	.15	.28**	-.13	.26**	-.30**	.23*	-.27**	.21*	-.12
Nimbleness	.07	-.09	.10	.01	-.02	.14	-.01	.10	-.01	.04

* $p < .05$. ** $p < .01$.

TABLE 3
Pearson Product–Moment Correlations Computed Between the Exercise Motive Measures and the Time Pressures, Work, Health, and Inner Concerns Subscales of the Hassles Index by Individuals Exercising < 6 Months and Those Exercising ≥ 6 Months

Scale	Time Pressures		Work		Health		Inner Concerns	
	< 6 months (n = 102)	≥ 6 months (n = 125)	< 6 months (n = 102)	≥ 6 months (n = 125)	< 6 months (n = 102)	≥ 6 months (n = 125)	< 6 months (n = 102)	≥ 6 months (n = 125)
Stress Management	.31**	-.26**	.15	-.31**	.31**	-.35**	.12	-.32**
Revitalization	-.10	-.33**	.07	-.39**	.30**	-.29**	.16	-.25**
Enjoyment	.13	-.27**	.12	-.29**	.26**	-.32**	.04	-.27**
Challenge	-.12	.12	.11	.03	-.04	-.30**	-.01	.08
Social Recognition	.33**	-.03	.34**	-.06	.31**	.02	-.13	.01
Affiliation	.31**	.05	-.12	-.11	.36**	-.01	.29**	-.02
Competition	.29**	-.10	.08	-.04	.31**	.08	.27**	.12
Health Pressures	-.12	-.06	.13	.12	.49**	-.12	.25**	.08
Ill-Health Avoidance	-.06	.08	.32**	-.13	.26**	-.06	.11	.11
Positive Health	.07	-.28**	.16	-.31**	.33**	-.14	.39**	-.11
Weight Management	.27**	-.21*	.24**	-.03	.30**	-.13	.31**	-.14
Appearance	.23*	.07	.04	.07	-.03	.03	.22*	.09
Nimbleness	.12	.15	-.15	.02	.11	.02	.04	.01

* $p < .05$. ** $p < .01$.

intrinsic exercise motives (Stress Management, Revitalization, Enjoyment) among those individuals exercising for 6 months or more.

Discussion

The present findings suggest that, in the short term, extrinsic exercise motives for exercise are significantly related to poorer psychological well-being, whereas in the long term, intrinsic exercise motives for exercise are related to aspects of better psychological well-being. These findings are consistent with two theoretical standpoints. First, we found that extrinsic exercise motives are related to poorer psychological well-being, whereas intrinsic exercise motives for exercise are accompanied by better psychological well-being (Markland & Ingledew, 1997). Second, the present findings support Markland and Ingledew's suggestion that self-determination theory (Deci & Ryan, 1985, 1990) is crucial to understanding the relationship between exercise motivation and psychological well-being. That is, individuals' motivations for exercise change over time from extrinsic motives to more intrinsic motives.

Within this theory, one could argue that a dynamic process accounts for the shift from the significant relationship between extrinsic motivations and poorer psychological well-being to the significant relationship between intrinsic exercise motivations and better psychological well-being. This process would be consistent with the view that individuals internalize exercise motivation over time and that this affects psychological well-being. However, this interpretation assumes that this change over time is causal, with intrinsic exercise motives causing better psychological well-being. It is perhaps more likely that a more integrative relationship occurs whereby exercise motive and psychological well-being interact, through reinforcement of positive feelings, and exercise becomes more rewarding. Future researchers should expand on the present methodology and findings to examine this interaction, perhaps using longitudinal data.

Notwithstanding these speculations, the present findings suggest that one can use the combination of the concepts of self-determination theory and exercise motivations to examine the relationship between exercise motives and psychological well-being. Researchers should pursue this research area with confidence by using longitudinal data to gain further insight into relationships, over time, between exercise motives and psychological well-being.

REFERENCES

- Asci, F. H., Kin, A., & Kosar, S. N. (1998). Effect of participation in an 8-week aerobic dance and step aerobics program on physical self-perception and body image satisfaction. *International Journal of Sport Psychology*, 29, 366-375.
- Bakker, F. C., Whiting, H. T. A., & van der Brug, H. (1997). *Sport psychology: Concepts and applications*. London: Wiley.
- Bundy, C., Carroll, D., Wallace, L., & Nagle, R. (1998). Stress management and exercise

- training in chronic stable angina pectoris. *Psychology and Health*, 13, 147–155.
- Bybee, J., Zigler, E., Berliner, D., & Merisca, R. (1996). Guilt, guilt-evoking events, depression, and eating disorders. *Current Psychology*, 15, 113–127.
- Craft, L. L., & Landers, D. M. (1998). The effect of exercise on clinical depression and depression resulting from mental illness: A meta-analysis. *Journal of Sport & Exercise Psychology*, 20, 339–357.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16, 297–334.
- Daley, A. J., & Parfitt, G. (1996). Good health—Is it worth it? Mood states, physical well-being, job satisfaction and absenteeism in members and non-members of a British corporate health and fitness club. *Journal of Occupational and Organizational Psychology*, 69, 121–134.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- Deci, E. L., & Ryan, R. M. (1990). A motivational approach to self: Integration in personality. In R. A. Dienstbier (Ed.), *Nebraska symposium on motivation: Vol. 38. Perspectives on motivation* (pp. 237–288). Lincoln: University of Nebraska Press.
- DuCharme, K. A., Bray, S. R., & Brawley, L. R. (1998). Predicting community exercise attendance using self-efficacy and goal cognitions. *Journal of Sport & Exercise Psychology*, 20, S22.
- Goldberg, D., & Williams, P. (1991). *A user's guide to the general health questionnaire*. London: NFER Nelson.
- Hunter, J. A., & Stringer, M. (1993). A short measure of self-esteem. Some data on reliability. *Perceptual and Motor Skills*, 76, 425–426.
- Kerr, J. H., & VandenWollenberg, A. E. (1997). High and low intensity exercise and psychological mood states. *Psychology & Health*, 12, 603–618.
- Lazarus, R. S., & Folkman, S. (1989). *Manual for the Hassles and Uplifts Scales*. Palo Alto, CA: Consulting Psychologists Press.
- Loland, N. W. (1998). Body image and physical activity: A survey among Norwegian men and women. *International Journal of Sport Psychology*, 29, 339–365.
- Maltby, J. (1995). A short measure of general self-esteem among Northern Irish university students: Some data on reliability. *Perceptual and Motor Skills*, 81, 1201–1202.
- Markland, D. (2000). The Exercise Motivations Inventory-2. In J. Maltby, C. A. Lewis, & A. P. Hill (Eds.), *Commissioned reviews of 250 psychological tests* (pp. 58–60). Llanymor, Wales: Edwin Mellen Press.
- Markland, D., & Ingledew, D. K. (1997). The measurement of exercise motives: Factorial validity and invariance across gender of a revised exercise motivations inventory. *British Journal of Health Psychology*, 2, 361–376.
- Marsh, H. W. (1990). *Self-Description Questionnaire: SDQ III manual*. Campbelltown: University of Western Sydney, Macarthur.
- Rief, W., & Hermanutz, M. (1996). Responses to activation and rest in patients with panic disorder and major depression. *British Journal of Clinical Psychology*, 35, 605–616.
- Rodgers, W. M., & Gauvin, L. (1998). Heterogeneity of incentives for physical activity and self-efficacy in highly active and moderately active women exercisers. *Journal of Applied Social Psychology*, 28, 1016–1029.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Stephoe, A., Lipsey, Z., & Wardle, J. (1998). Stress, hassles and variations in alcohol consumption, food choice and physical exercise: A diary study. *British Journal of Health Psychology*, 3, 51–63.
- Stetson, B. A., Rahn, J. M., Dubbert, P. M., Wilner, B. I., & Mercury, M. G. (1997).

Prospective evaluation of the effects of stress on exercise adherence in community-residing women. *Health Psychology, 16*, 515–520.

Szabo, A., Mesko, A., Caputo, A., & Gill, E. T. (1998). Examination of exercise-induced feeling states in four modes of exercise. *International Journal of Sport Psychology, 29*, 376–390.

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