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The Impact of Intrinsic and Extrinsic Motivation and Amotivation on Physical Activity Participation

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Abstract: *This research explores the impact of intrinsic, extrinsic, and amotivation on physical activity among young adults, using Self-Determination Theory (Deci & Ryan, 1985) as its guiding framework. The study investigates how these different types of motivation influence participation in physical activity. Data were collected from 245 participants aged 18 to 30, using the Sport Motivation Scale and the Godin Leisure-Time Exercise Questionnaire to measure their motivation and physical activity levels. The findings reveal that intrinsic motivation, driven by personal enjoyment and interest in the activity, plays a key role in maintaining consistent physical activity over time. Extrinsic motivation, linked to external rewards such as recognition or approval, also encourages physical activity, though to a lesser degree. In contrast, amotivation, defined as a lack of intent or belief in one's ability to engage in physical activity, negatively affects activity levels. These results emphasize the critical role of fostering intrinsic motivation to promote long-term engagement in physical exercise. The study provides important insights for designing effective interventions to encourage regular physical activity among young adults, contributing to their overall health and well-being.*

Keywords: *physical activity, intrinsic and extrinsic motivation, amotivation*

Introduction

Physical activity is linked to a wide range of health benefits, including relief from chronic health conditions and improvements in mental health and well-being. Regular physical activity has been shown to help prevent and manage diseases like heart disease, stroke, diabetes, and some forms of cancer. It also prevents hypertension, helps maintain a healthy body weight, and positively impacts quality of life, mental health, and well-being (World Health Organization, 2010). The same organization recommends at least 30 minutes of physical activity daily or one hour of activity three times a week. Physical activity is defined as "any bodily movement produced by skeletal muscle contractions that increases energy expenditure above basal levels" (Caspersen et al., 1985, p. 126), while exercise is "a specific type of physical activity that is planned, structured, and repeatedly performed to improve or maintain physical fitness" (Caspersen et al., 1985, p. 126). Despite these benefits, current global estimates indicate that one in four adults and 81% of adolescents do not get enough physical activity. In economically developed countries, inactivity rates can reach as high as 70% due to changes in transport patterns, increased use of technology for work and leisure, and sedentary lifestyles (Strain et al., 2024). Increased inactivity negatively affects healthcare systems, the environment, economic development, community well-being, and quality of life.

Self-Determination Theory

Self-Determination Theory (Deci & Ryan, 1985) provides a framework for understanding how different types of motivation affect behavior. It expands on the traditional categorization of intrinsic (internal) and extrinsic (external) motivation, focusing on autonomy in regulating motivation. Motivation exists on a continuum, ranging from amotivation to intrinsic motivation. Amotivation reflects a lack of intention to engage in the behavior. Extrinsic motivation can be controlled or autonomous, depending on the individual's perception of external influences. Intrinsic motivation refers to engaging in activities for the inherent satisfaction and enjoyment they provide.

This theory plays a key role in predicting physical activity and developing interventions. Intrinsically motivated individuals find physical activity enjoyable, which fosters consistent exercise habits. Intrinsic motivation is crucial for long-term engagement (Frederick & Ryan, 1995). While extrinsic motivation can initiate activity, it is often less sustainable. Those experiencing amotivation may avoid physical activity altogether (Ryan & Deci, 2000). Research

has examined motivation across various populations, revealing that active individuals often cite enjoyment and competence as primary motivators, while exercise participants frequently mention body-related motives (Frederick & Ryan, 1993). Kilpatrick et al. (2005) showed that motivation differs between sports and exercise, with recreational activities aligning more closely with desirable motivational strategies, leading to higher adherence rates. Studies based on the Self-Determination Theory indicate that athletes focused on intrinsic goals report greater well-being (Chatzisarantis & Hagger, 2007). Geller et al. (2018) found that while both intrinsic and extrinsic motivations support regular activity, intrinsic motivation is critical for long-term adherence. Therefore, physical activity interventions should enhance intrinsic enjoyment and personal relevance.

This paper is about individual physical activity and its motivational aspects. The primary goal of this research is to identify the specific differences in the levels of intrinsic, extrinsic, and motivation among individuals engaged in different types of physical activity and to determine which type of motivation most contributes to regular participation in physical activity.

Method

Sample

Out of the 285 completed questionnaires, the sample for this study consists of 245 respondents aged 18 to 30 (M = 24.29 years), 92 are male (37.6%), while the remaining 153 are female (62.4%). The majority (82.4%) live in urban areas, 10.6% in small towns, and 6.9% in rural areas. Most participants are students (39.6%), followed by individuals with a bachelor's degree (29.4%). Regarding physical activity, 74.7% of respondents reported being physically active, while 25.3% were not. In response to the question, "Why do you not engage in physical activity?", 27.9% of participants answered "I do not have time," 19.2% cited anxiety, 10.6% mentioned financial reasons, 11.5% stated they do not know which type of physical activity to engage in, 4.8% have health issues, 2.9% believe it is unnecessary, and 23.1% selected "other," listing reasons such as pregnancy, lack of interest, or negative past experiences.

Data Collection

A set of instruments was created for this study, and the survey was conducted online via Google Forms. Participants were informed about the purpose and goals of the research, assured anonymity, and were free to withdraw at any time, as participation was voluntary. Before completing the questionnaire, each participant gave their consent to participate. Completing the questionnaire took no more than 10 minutes. The data were collected in 2024.

Variables and Measurement Instruments

The "physical activity" variable was measured using the Godin Leisure-Time Exercise Questionnaire (GLTEQ, Godin, 2011). Participants were asked to report how often, over 7 days, they engaged in specific exercises for more than 15 minutes during their free time and to multiply the frequency by the specified number. Based on the total score, participants were categorized into three groups: 1. Active-Vigorous Physical Activity (elevated heart rate, heavy sweating, exhausting exercise): Multiply the weekly frequency by 9 (score of 24 or above). Examples: running, weightlifting, CrossFit, etc. 2. Moderately Active - Moderate Physical Activity (mild exertion): Multiply the weekly frequency by 5 (score between 14 and 23). Examples: brisk walking, tennis, etc. 3. Insufficiently Active - Light Physical Activity (minimal effort): Multiply the weekly frequency by 3 (score below 14). Examples: yoga, fishing, bowling, light walking, etc.

The instrument used to measure motivation variables was the Exercise Motivation Scale (Sport Motivation Scale—Pelletier et al., 1995). This scale assesses individuals' motivation for physical activity, evaluating intrinsic, extrinsic, and amotivation. It consists of 28 items (4 items per subscale) rated on a seven-point Likert scale.

Results

Descriptive measures of the questionnaires for measuring levels of physical activity, intrinsic motivation, extrinsic motivation and amotivation are presented in Table 1.

Table 1. *Descriptive indicators for the variables of physical activity and motivation*

	Min.	Maks.	M	SD	Sk	Ku
Total Physical Activity Score	0	117	40.24	23.53	.42	121
Intrinsic Motivation	12	84	54.4	17.18	-.55	-.365
Extrinsic Motivation	14	81	45.6	13.44	.09	.06
Amotivation	1	25	9.02	5.56	1.15	.39

Note. Min – Minimum, Max – Maximum, M – mean, SD – standard deviation, Sk – skewness, Ku – kurtosis.

The skewness and kurtosis values show a positively skewed distribution for participants' scores on physical activity, extrinsic motivation, and amotivation subscales. In contrast, the distribution for intrinsic motivation is negatively skewed. These results suggest that most participants were intrinsically motivated. The findings indicate no significant deviation from a normal distribution (skewness value does not exceed 2) (Hair & Alamer, 2022). After the descriptive statistics, a significance test for the correlation between variables was conducted (Table 2).

Table 2. *Intercorrelation of physical activity and motivation variables*

	1	2	3	4
1				
2	.35**			
3	.29**	.58**		
4	.36**	.32**	.103**	

*Note. 1 – total physical activity score, 2 – intrinsic motivation, 3 – extrinsic motivation, 4 – amotivation, ** p < .01; * p < .05*

The results indicate that both intrinsic and extrinsic motivation are positively correlated with levels of physical activity. Higher physical activity is moderately associated with higher levels of both types of motivation. Amotivation, on the other hand, shows a negative correlation with physical activity. Higher levels of physical activity are linked to lower levels of amotivation, suggesting that individuals with greater intrinsic or extrinsic motivation are less likely to be insufficiently active.

Using the Analysis of Variance, the differences between subjects of different physical activity levels on intrinsic and extrinsic motivation and amotivation measures were determined (Table 3).

Table 3. *Differences between the values of intrinsic and extrinsic motivation and amotivation among respondents of different categories of physical activity*

	df	F	p
Intrinsic Motivation	2	11.06	.000
	242		
	244		
Extrinsic Motivation	2	8.74	.000
	242		
	244		
Amotivation	2	25.91	.000
	242		
	244		

Note: df – degrees of freedom, F- regression model significance test, p-statistical significance

The Analysis of Variance results show statistically significant differences between groups for all three variables: intrinsic motivation, extrinsic motivation, and amotivation. For intrinsic motivation, there is a significant difference

between groups: $F(2, 24) = 11.07$, $p < 0.001$, indicating substantial variation in average intrinsic motivation across the groups [low ($M = 42.94$), middle ($M = 50.88$), high ($M = 57.00$)]. The results for extrinsic motivation also show a significant difference: $F(2, 24) = 8.75$, $p < 0.001$, suggesting notable variance between groups [low ($M = 37.08$), middle ($M = 45.03$), high ($M = 47.24$)]. Similarly, for amotivation, significant differences were found: $F(2, 24) = 25.91$, $p < 0.001$, indicating considerable differences in average amotivation levels among the groups [low ($M = 14.14$), middle ($M = 11.38$), high ($M = 7.75$)]. The Levene's test for homogeneity of variance for intrinsic motivation ($p = 0.227$) and extrinsic motivation ($p = 0.642$), shows no significant differences between groups indicating that the variances are homogeneous. However, for amotivation, Levene's test indicates a significant difference in variances between groups ($p < 0.05$). Due to this variance difference, the Games-Howell post-hoc test will be applied for amotivation.

The Bonferroni test results for intrinsic motivation shows only significant difference between low and high activity groups (MD = -14.06, $p < 0.001$), indicating higher intrinsic motivation in the high activity group. For extrinsic motivation, a significant difference was observed between low and high activity groups (MD = -10.16, $p < 0.001$), with lower extrinsic motivation in the high activity group. The Games-Howell test for amotivation shows a significant difference between low and high activity groups (MD = 6.39, $p < 0.001$), and moderate and high activity groups (MD = -3.62, $p = 0.042$), with higher amotivation in the high activity group.

The following are the results of the Regression Analysis, which determines the predictive significance of different types of motivation for engaging in physical activity (Table 4).

Table 4. *Linear regression coefficient and model significance testing - intrinsic and extrinsic motivation and amotivation as predictors of the level of physical activity*

Model	R	R2	Adjusted R2	F	p
1	.45	.21	.200	21.31	.000

Note. R - correlation coefficient, R2 - determination coefficient, F - regression model significance test, p - statistical significance

The obtained values indicate that the regression model is statistically significant (F=21.31, $p < 0.001$), i.e. indicates a significant contribution of predictors in explaining the variance of the degree of physical activity. The coefficient of determination (R2) shows that the model explains 21% of the variance of the dependent variable, ie. degree of physical activity. The results, including the beta coefficients and t-tests, indicate that extrinsic motivation is a positive and statistically significant predictor of physical activity levels ($\beta = 0.16$, $p = 0.018$). Intrinsic motivation is also significant but to a lesser extent ($\beta = 0.15$, $p = 0.039$). Amotivation is a most significant predictor of physical activity levels ($\beta = -0.29$, $p < 0.001$).

Discussion

This study examined the impact of intrinsic and extrinsic motivation on different levels of physical activity: insufficient, moderate, and high. The findings provide insights into how various types of motivation influence physical activity levels among participants. Intrinsic motivation was generally high, with significant variability, while extrinsic motivation showed moderate values with less variation. Amotivation was low, with some participants highly unmotivated. A strong positive correlation between intrinsic and extrinsic motivation suggests that participants often exhibit both at high levels. More physically active individuals had higher intrinsic and extrinsic motivation, while higher amotivation correlated with lower activity levels.

Results revealed significant differences in motivation and amotivation among groups with different activity levels. Highly active participants had significantly higher intrinsic motivation than those with lower activity levels. Similarly, extrinsic motivation was higher in the more active groups, indicating that external rewards can motivate physical activity. Amotivation was significantly higher in less active participants, suggesting that those who feel physical activity is not helpful or achievable are less likely to engage. These results align with previous research showing that internal motives, such as enjoyment, challenge, personal growth, and fulfilling basic psychological needs (autonomy, competence, and relatedness), can powerfully drive continued physical activity (Deci & Ryan,

2000). When individuals feel an internal desire to be active, they are less likely to quit and tend to choose activities that bring greater personal satisfaction. Participants with higher physical activity levels focus more on personal goals linked to higher intrinsic motivation. Similarly, those with higher activity levels also show greater extrinsic motivation, supporting the theory that external rewards and recognition play a role in motivating physical activity, especially when linked to rewards or social approval (Ryan & Deci, 2000). The most significant differences were observed in amotivation. Respondents with a low level of physical activity have significantly higher amotivation compared to those with a medium and high level of physical activity. The significant association of amotivation with a low level of physical activity indicates that people who are amotivated, i.e. who feel that physical activity is not helpful or achievable, rarely participate in physical activities. These results are consistent with research that shows that people who do not have a sense of control or competence for physical activity often give up on it (Vallerand, 2000).

Regression analysis showed that intrinsic and extrinsic motivation positively predicted physical activity levels, while amotivation had a negative impact. Together, these predictors explained 21% of the variance in physical activity. Intrinsic motivation had a more substantial influence, suggesting that enjoyment and personal interest are key drivers of long-term engagement in physical activity. The results can be explained by the fact that intrinsic motivation often stems from the enjoyment of the physical activity itself, which is more present in individuals engaged in high-intensity activities that require extra dedication and passion. On the other hand, those involved in low- to moderate-intensity activities may have different motives, such as social aspects or minimal effort, which do not provide enough challenge to boost intrinsic motivation. The findings also suggest that individuals participating in high-intensity physical activities show higher levels of extrinsic motivation than those engaged in lower-intensity activities. This could be due to the greater external rewards and recognition associated with more intense activities, such as competitions or achieving sports goals.

Conclusion

In conclusion, intrinsic and extrinsic motivation significantly contribute to physical activity, while high amotivation reduces participation. Interventions that promote intrinsic motivation, such as creating enjoyable activities or fostering a sense of achievement, may be more effective in sustaining physical activity over time. These findings have practical implications for trainers, psychologists, and health professionals in designing interventions that encourage long-term engagement in physical activity.

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