

Motivational correlates of sports and physical activity

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Abstract

Background and Study Aim The motivational aspect of athletes' commitment to training is an important indicator of their sports performance. However, there is insufficient understanding of the subtle dynamics that determine this commitment. The purpose of the study is to explore how athletes' motivation relates to their training duration across different sports. It also aims to identify the impact of intrinsic, extrinsic, and amotivation on training hours and to predict athletes' training commitment.

Material and Methods In the study, 60 college students participated. Data collection utilized the Sport Motivation Scale, which assesses three dimensions of motivation: intrinsic, extrinsic, and amotivation. Physical training hours were meticulously recorded by the instructor. A maximum of 14 hours of training was provided per week as part of a training module lasting one complete month. Players who were absent due to illness were excluded from the study.

Results A significant positive correlation was found between intrinsic motivation ($r = 0.93$) and extrinsic motivation ($r = 0.919$) with training duration per week ($p < 0.01$). Additionally, a significant negative correlation was observed between amotivation and training duration per week ($r = -0.873$, $p < 0.01$). Motivation accounted for 84.4% of the variance in predicting physical activity training duration. Furthermore, motivation demonstrated a significant positive relationship ($\beta = 0.921$) with physical activity training duration.

Conclusions The current research provides evidence that both intrinsic and extrinsic motivation are crucial for engaging athletes in physical training and activity. Furthermore, amotivation serves as a deterrent to good performance in sports. To foster continuous improvement, coaches and instructors must intervene by providing athletes with positive feedback and maintaining their interest in the game through a variety of sports skills.

Keywords: sports motivation, physical training, intrinsic -extrinsic motivation, amotivation

Introduction

The motivation in relation to sports refers to an individual's drive to excel, accomplish goals, and succeed in their athletic endeavors. Hellriegel and Woodman state that motivation is a functional relationship between effort and perceived levels of performance on one aspect and the reward expectations on the other [1]. It involves the psychological factors that influence a person's behavior, effort, and persistence in sports activities with the aim of attaining success, recognition, and personal satisfaction. Motivation as a derivative of human emotions which neuropsychologically operates from amygdala structure of brain [2]. It can be categorized into two main types: intrinsic and extrinsic motivation. Intrinsic motivation comes from within the individual, driven by personal enjoyment, satisfaction, and the inherent pleasure of participating in the sport. It refers to engaging in an activity purely for the pleasure and satisfaction derived from doing the activity [3]. When a person is intrinsically motivated, he or

she will perform the behavior voluntarily, in the absence of material rewards or extrinsic constraints. This motivation originates from the autonomy provided to the players during training [4]. A three classes taxonomy of Intrinsic motivation (IM) has been postulated [5]. This taxonomy is based on literature that signifies the presence of three types of IM: to Know, to Accomplish Things, to Experience Stimulation. IM to know relates to constructs of exploration, curiosity, learning, and the need to know and understand. For e.g. intrinsic need in athletes to learn new techniques and experience sheer pleasure in them. The second construct is when players interact with their environment and feel competent to acquire unique accomplishments. Third construct explains how an athlete engages in sports activity to experience stimulating sensations of pleasure, aesthetic experiences, along with fun and excitement.

Extrinsic motivation, on the other hand, involves extrinsic factors like rewards, recognition, and reinforcement. The three constructs have been given to classify Extrinsic motivation: extrinsic regulation, introjection and identification [5]. Extrinsic regulation refers to behavior that is

controlled by extrinsic sources such as material rewards or constraints imposed by others [4]. Sports is mostly performed to gain praise by other people and to avoid criticisms. Athletes who participate in sport in order to receive praise from their coach or because they feel urged to do so by their parents are externally motivated.

With introjection, the formerly extrinsic source of motivation has been internalized for e.g. playing sports due internal pressures of guilt or anxiety to look aesthetically in good shape or perform exceptionally well. Identification construct signifies how a player attaches to their extrinsic identity which they gain from sports. Achievement oriented individuals set specific, measurable, achievable, relevant, and time-bound goals for themselves in sports. These goals provide direction and purpose, fueling their drive to work hard and make progress. Third form of motivation identified in players is amotivation [5]. These individuals experience feelings of incompetence and lack of control. They are neither intrinsically motivated nor extrinsically motivated. When athletes are in such a state, they no longer identify any good reasons for why they continue to train. Eventually they may even decide to stop practicing their sport and give up sports career.

Sports motivation often correlates positively with competitiveness [6]. Athletes with high motivation are willing to invest a significant amount of effort and time in practice and training. They are more likely to persist through challenges, setbacks, and failures because they view these as opportunities for growth and improvement. It can be enhanced when athletes feel a sense of autonomy, competence, and relatedness. When athletes have control over their training and choices, feel competent in their skills, and have a sense of belongingness for a supportive team or community, their motivation to achieve increases.

Research studies demonstrate that intrinsic motivation is associated with higher levels of self-reported physical activity [7, 8] and maximum attendance in the physical activity class [9, 10]. On the contrary, amotivation is linked to negative outcomes such as boredom [11], unpleasant emotions and minimal intentions to participate in physical activity [12]. Attribution theory explores how individuals attribute success and failure [13]. Athletes with sports motivation tend to attribute their successes to intrinsic factors of effort and skill, while attributing failures to extrinsic factors like bad luck or tough competition. They feel that this mindset can lead to increased motivation to improve and succeed. Coaches, mentors, and role models can significantly influence an athlete's motivation. Positive reinforcement, constructive feedback, and effective coaching strategies can help nurture and sustain high levels of sports motivation [14].

Research Problem. The study aims to study the relationship of intrinsic motivation, extrinsic motivation and amotivation to the duration of physical activity training. Further, it aims to establish role of motivation in predicting the duration of physical activity training hours for players in various games.

Materials and Methods

Participants

Sample of the study consists of 60 undergraduate physical education trainees (males =36, females =24) from Government Arts and Sports College in Jalandhar (Punjab, India) training for their respective games. Their age range of the players is 18-25 yrs. (\bar{x} =21.5). They were observed during their physical activity training sessions held every day for complete one month. Informed consent was obtained from all individual participants included in the study. The study was conducted in accordance with ethical standards. Student participation was voluntary, data confidentiality was ensured, and the study was approved by the College ethics committee.

Research Design

The research incorporated the inferential approach using the questionnaire method to collect data for the research. The basic study was conducted from 1st September- 1st October, 2023.

In the study, a sports motivation scale [5, 15] was utilized, comprising seven subscales. These subscales measure three types of intrinsic motivation: 'to Know,' 'to Accomplish Things,' and 'to Experience Stimulation'. The score on each subscale ranges from 4-28. The total score of the entire scale ranges from 28- 196. It assesses three forms of regulation for Extrinsic Motivation -Identified, Introjected, and External. It also provides a score of Amotivation. Adequate internal consistency, with alpha scores of the seven subscales ranging from .74 to .80. For the present study the three combined scores of intrinsic motivations, extrinsic motivation and amotivation along with total score have also been incorporated.

The standardized sports motivation scale was administered to student groups after providing clear instructions regarding how to answer the statements in the questionnaire. Participants provided their responses on the response sheet, and scoring was conducted according to the norms provided in the manual.

The physical activity hours were recorded over a period of 31 days by the instructor, who observed the players objectively during activity training sessions and maintained a record of the same. The average training hours per week devoted by each player were then calculated for further data analysis.

Statistical Analysis

The Statistical Package for the Social Sciences

(SPSS) software, version 21, was utilized for the following calculations and statistical operations: descriptive statistics, Pearson’s product-moment coefficient of correlation, and simple linear regression with standardized (β) coefficients.

Results

As per the Figure 1. the mean score of sixty students for activity hours devoted per week is 9. The maximum hours of the physical activity are 14. The mean score of intrinsic motivation is 40 and extrinsic motivation is 41. This conveys that both the types of motivation are moderately operational

in the players to bring out optimal training duration in players. The mean score of amotivation is 15, which signifies presence of some factors that are causing boredom/ loss of interest towards training in players. The total motivation mean score of 97 indicates moderate motivation level of players. To analyze the variables in detail the constructs of Intrinsic and Extrinsic motivation have been discussed separately.

Figure 2 depicts that the Mean score of Construct – ‘to know’ is 11.83. The construct ‘to accomplish’ mean score is 13.8. The third construct ‘stimulation’ is 14.8. The mean score of intrinsic motivation

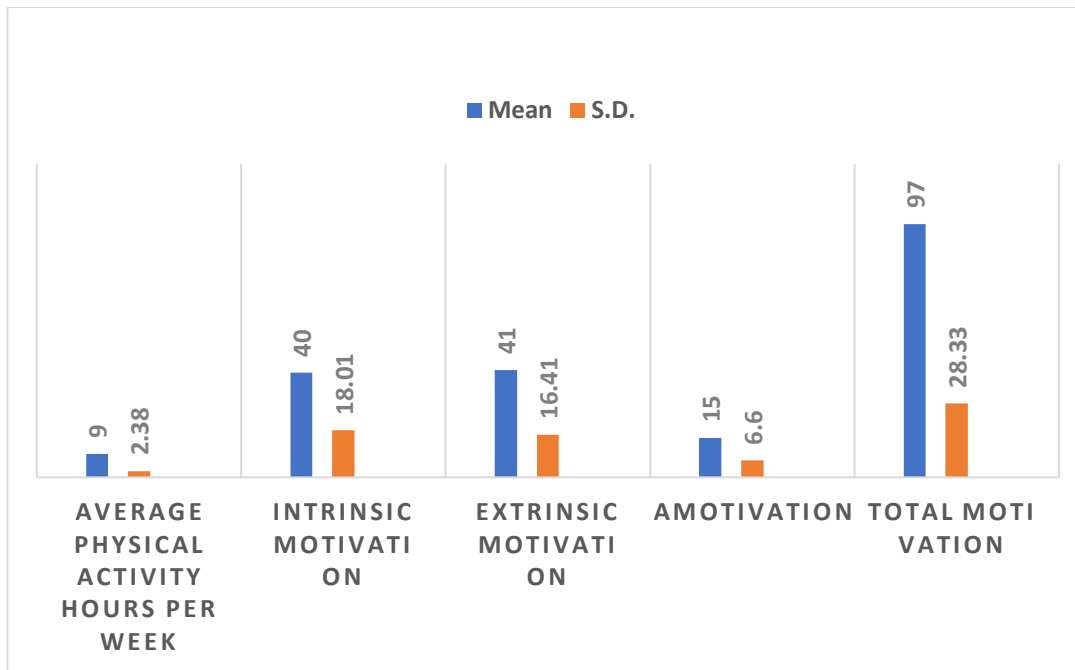


Figure 1. Descriptive statistics of the sample (N=60) under study

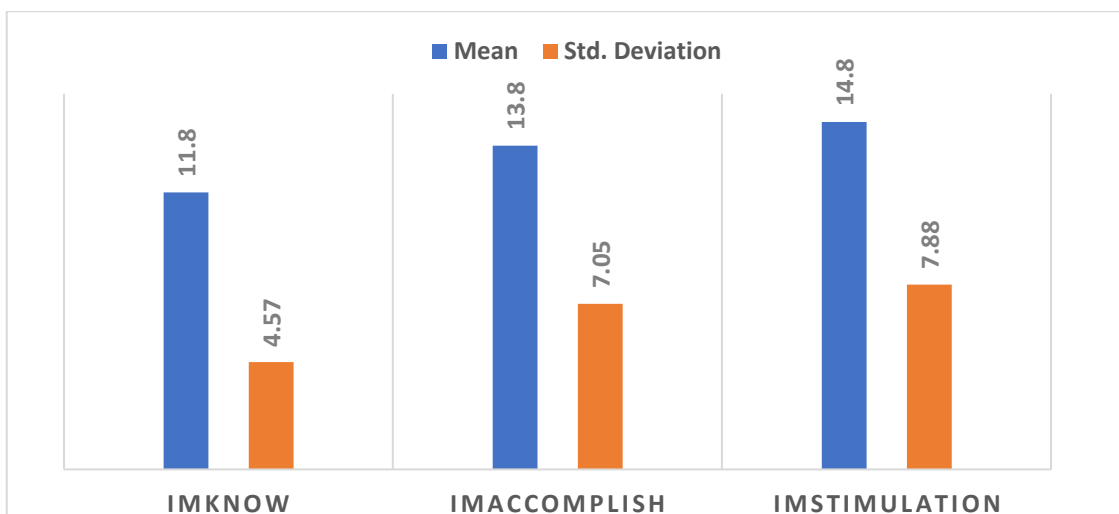


Figure 2. Descriptive statistics of Intrinsic motivation -3 subscales: IMKNOW - Intrinsic Motivation to Know; IMACCOMPLISH - Intrinsic Motivation to Accomplish; IMSTIMULATION - Intrinsic Motivation to Stimulation

derived from stimulating the senses is higher signifying that players engage in sports to derive pleasure during the play activity and it gives them feel good factor. Along with this second construct, motivation to accomplish is there where the players seek drive in how it feels to accomplish success through play activities. Most of the players focus on accomplishing goals in early stages of training but the process of training is most important. The drive 'to learn' is least focused upon by the players. If we analyze each construct score it is towards the moderate level as the subscales score ranges from 4-28. The findings highlight how coaches and instructors should make players aware of the internal motivational drives and the intrinsic patterns of performance.

The Figure 3 reveals the descriptive statistics of three constructs of Extrinsic motivation. The mean of extrinsic motivation of 'Identification' is 14.77. The mean score pertaining to 'introjection' is 14.20. Both signify that players are externally identifying with their roles as players and as well are performing due to the introjected feelings that they have to perform well. These can be driven either by guilt or by anxiety. The 'regulation' component mean score is 12.83 meaning that rewards and incentives play secondary role. All the mean scores are near moderate level. The extrinsic motivation can be instilled through positive reinforcement by

the coaches along with psychological rewards and incentives.

Further the data was analyzed using Pearson's product moment correlation. As evident from Table 1; there is a significant positive correlation between intrinsic motivation and training duration per week ($r= 0.932$). the relationship between extrinsic motivation and training hours is positively correlated ($r=0.919$). the increase in one variable suggests a significant increase in the other variable. There is significant negative correlation between amotivation and training duration per week ($r=-0.873$). The total score of sports motivation shows significant positive correlation ($r=0.921$) indicating that motivation has significant role in determining the physical and exercise duration in players. This provides suitable answer to the Research question 1.

Further the data was analyzed using simple linear regression after fulfilling the assumptions. Sports motivation (total score) is the criterion to predict physical activity training duration of sixty players. The results obtained are depicted in Table 2.

Results of the analysis depict that Motivation shows significant positive relationship ($\beta=0.921$) with physical activity training duration. Increase in motivation suggests significant increase in physical activity training. 'R square' is the proportion of variance in the criterion explained by the predictor(s) [16]. Motivation (total score) explains

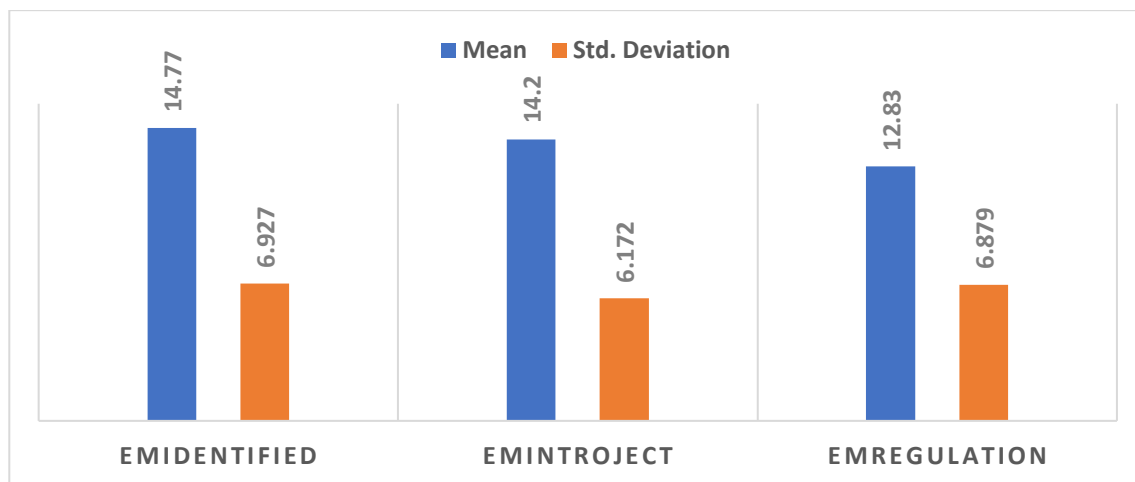


Figure 3. Descriptive Statistics of Extrinsic motivation -3 subscales: EMIDENTIFIED – Extrinsic Motivation Identified; EMINTROJECT – Extrinsic Motivation Introjection; EMRECULATION - Extrinsic Motivation Regulation

Table 1. Correlation coefficients of the intrinsic, extrinsic motivation and amotivation with average training duration per week

Variables duration per week	Average training
Intrinsic motivation	0.932 **
Extrinsic motivation	0.919**
Amotivation	-0.873**
Sports motivation (Total)	0.921 **

**significance level at 0.01

Table 2. Regression Coefficients to predict physical activity training hours from Sports motivation (n = 60).

Predictors	B	Std. Error	Beta (β)	T	R ²	F	Sig. level
Motivation	.921	11.20	.921	12.54	.844	157.46	0.01

84.4% of the variance ($R^2 = 0.844$) in predicting physical activity training duration. This research substantiates Research question 2 that motivation a significant predictor of duration of physical activity training.

Discussion

The aim of this study was to investigate the motivational correlates of sports and physical activity, focusing on the relationship between intrinsic and extrinsic motivation and training duration among athletes. The results revealed significant positive correlations between intrinsic and extrinsic motivation and training duration, indicating that athletes with higher levels of motivation tended to spend more time in training sessions. Additionally, a significant negative correlation was found between amotivation and training duration, suggesting that a lack of motivation negatively impacts the time spent on physical activity. These findings underscore the importance of understanding and nurturing athletes' motivation to enhance their engagement in sports and physical training.

The correlation analysis clearly establishes a relationship between motivation and the duration of physical activity and sports training. It highlights that both intrinsic and extrinsic motivation contribute positively to the training hours devoted by players, albeit at different levels. Conversely, amotivation emerges as a significant barrier to physical training in players. Research evidence supports the notion that amotivation can lead to burnout, decreased sports engagement, poor performance, and eventual dropout [17]. Consistent with our findings, existing literature suggests that perceptions of teacher, coach, and parental behavior can significantly affect players' arousal levels and performance [18]. Moreover, interventions aimed at promoting self-determined forms of motivation, such as providing feedback on competence and clear structure in physical activity and sports, have been shown to undermine amotivation. In comparison with previous research, our findings underscore the importance of understanding the nuanced dynamics of motivation in influencing athletes' engagement in physical activity and sports training. By elucidating these relationships, our study contributes to a deeper understanding of motivational factors in sports and physical activity settings.

Similar research supports our findings, which aimed to identify the five most important factors

contributing to athletes' success [19]. The athletes ranked their innate athletic ability as the primary factor, followed by intrinsic motivation, practice efforts, coachability, and motor skills. Extrinsic motivation was ranked thirteenth out of fifteen factors. Similarly, a study examining the motivation and achievements of basketball players found that participants rated coach behavior and a learning-oriented climate as key determinants of motivation [20]. The motivation level of each player is influenced by individual differences, stemming from both nature and nurture factors [21]. Therefore, the training schedule should aim to enhance players' motivation levels. Physical activity training should nurture motivation through positive reinforcement, timely feedback, and motivational talks. It's crucial to recognize that players' behavior is shaped by the training modules they undergo in any game. The training schedule forms the foundation of their performance, and motivational drive determines their performance trajectory. Coaches and instructors should create a conducive atmosphere during games that fosters confidence and leadership [22, 23].

In comparison with previous research, our study adds to the understanding of motivational factors in athletic performance, particularly in highlighting the significance of intrinsic motivation and practice efforts over extrinsic motivation. While previous studies have emphasized coach behavior and a learning-oriented climate, our findings underscore the importance of individual differences and the role of nature and nurture factors in shaping athletes' motivation levels and performance outcomes.

In summary, our study provides valuable insights into the complex interplay between motivation and athletic performance. Future research could explore longitudinal studies to examine how motivational factors evolve over time and their long-term impact on athletes' development and success.

Conclusions

In light of the research results, the following conclusions can be drawn:

1. The current research holds a testimony that intrinsic and extrinsic motivation are imperative to engage the sportspersons in physical training and activity.
2. To encourage the players continuous interventions must be made by coaches, instructors to provide an objective feedback,

- upkeep their interests in game alternating with variety of sports skills.
3. Systematic reinforcement and autonomy during practice sessions must be ensured to prevent amotivation in players and to stimulate them for their optimal performance by explaining the importance of optimal level of arousal.
 4. Emotions serve as the base of motivation. Fostering positive emotions in players during training through peptalks automatically enhances their motivation.
 5. The pre-competition and post-competition counseling sessions are essential with the psychologist and coach. They can be integrated with biofeedback training modules. It helps the players to learn how to manage autonomous body functions which enables them to control performance anxiety and stay motivated during training and competition as well.

Conflict of interest

The authors declare that there is no conflict of interests.

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