



PSYCHOMETRIC PROPERTIES OF THE INTRINSIC MOTIVATION INVENTORY (IMI) AMONG INDONESIAN STUDENT FUTSAL ATHLETES

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Abstract

This study aimed to adapt and validate the Intrinsic Motivation Inventory (IMI) for Indonesian futsal student-athletes within the framework of Self-Determination Theory. A cross-cultural psychometric adaptation process was conducted, including translation, synthesis, back-translation, expert judgment, and field testing. Data were collected from 61 student-athletes, and content validity was assessed using Aiken's V, yielding a strong result ($V = 0.85$). The IMI demonstrated good internal consistency (Cronbach's $\alpha = 0.869$) and significant interdimensional correlations, such as between perceived competence and enjoyment-interest ($r = 0.516$, $p < .001$). The mean intrinsic motivation score ($M = 75.84$) indicated a moderately high level of motivation among participants. These findings confirm that the adapted IMI is a valid and reliable instrument for measuring intrinsic motivation among futsal athletes in Indonesia. Theoretically, the study supports Self-Determination Theory in a team-sport context, and practically, it provides a culturally relevant tool for coaches and sport psychologists to assess and enhance athlete motivation.

Keywords: *Psychometric Adaptation, Self-Determination Theory, Intrinsic Motivation, Futsal Athletes, Validation Study*

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Abstrak

*Penelitian ini bertujuan untuk mengadaptasi dan memvalidasi Intrinsic Motivation Inventory (IMI) bagi atlet mahasiswa futsal di Indonesia dalam kerangka Self-Determination Theory. Proses adaptasi psikometrik lintas budaya dilakukan melalui tahapan penerjemahan, sintesis, terjemahan balik, penilaian ahli, dan uji lapangan. Data dikumpulkan dari 61 atlet mahasiswa, dan validitas isi diuji menggunakan V Aiken dengan hasil yang kuat ($V = 0,85$). Instrumen IMI menunjukkan konsistensi internal yang baik (Cronbach's $\alpha = 0,869$) serta korelasi antardimensi yang signifikan, seperti antara *perceived competence* dan *enjoyment-interest* ($r = 0,516, p < .001$). Rata-rata skor motivasi intrinsik ($M = 75,84$) menunjukkan tingkat motivasi yang cukup tinggi di antara partisipan. Temuan ini menegaskan bahwa IMI versi adaptasi merupakan alat ukur yang valid dan reliabel untuk menilai motivasi intrinsik pada atlet futsal di Indonesia. Secara teoretis, penelitian ini mendukung Self-Determination Theory dalam konteks olahraga beregu, dan secara praktis memberikan alat yang relevan secara budaya bagi pelatih dan psikolog olahraga untuk menilai serta meningkatkan motivasi atlet.*

Kata Kunci: *Adaptasi Psikometrik, Teori Determinasi Diri, Motivasi Intrinsik, Atlet Futsal, Studi Validasi*

INTRODUCTION

Futsal is a dynamic and high-intensity team sport that demands not only technical proficiency and tactical awareness but also strong psychological resilience. Among the various psychological determinants of performance, motivation plays a central role in sustaining athletes' engagement, discipline, and achievement (Weinberg & Gould, 2023). Specifically, intrinsic motivation, the internal drive to engage in an activity for its own enjoyment and satisfaction rather than for external rewards, is regarded as one of the most powerful predictors of long-term participation and well-being in sport (Ryan & Deci, 2000; Vallerand & Losier, 2021).

According to Self-Determination Theory (SDT), intrinsic motivation flourishes when three basic psychological needs, autonomy, competence, and relatedness, are adequately fulfilled (Deci & Ryan, 2000). Although the importance of motivation has been widely discussed

in sport psychology, most empirical studies have concentrated on individual sports such as swimming, athletics, and fitness training (Chen et al., 2022; Sari & Pradana, 2021). Meanwhile, team sports like futsal involve distinct motivational mechanisms because athletes' goals and satisfaction are intertwined with teamwork, role distribution, and collective efficacy (Evans, Eys, & Bruner, 2013). These contextual factors influence how players perceive competence, autonomy, and pressure, suggesting that instruments developed for individual sports may not directly apply to team-based environments without careful adaptation.

The Intrinsic Motivation Inventory (IMI), introduced by McAuley, Duncan, and Tammen (1989), has become one of the most widely employed tools for assessing intrinsic motivation in educational, health, and sport settings. Although numerous studies have verified its reliability and validity, results often vary across cultural and situational contexts (He et al., 2022). Some validation efforts report consistent

factor structures, while others reveal discrepancies, particularly in the pressure-tension subscale, which sometimes behaves inconsistently with theoretical expectations. Such variations highlight the necessity of contextual and cultural adaptation when applying the IMI to new populations.

In Indonesia, studies involving the IMI remain scarce, especially in the domain of team sports. Most available adaptations focus on academic settings or individual athletes, leaving an empirical gap concerning how the instrument operates in sports that rely on cooperation and group coordination, such as futsal. Furthermore, sociocultural characteristics of Indonesian athletes, such as collectivism, modest self-expression, and emphasis on group harmony, may alter how items related to enjoyment or competence are interpreted (Brislin, 1986; Suwartono, 2023). Without proper psychometric adaptation, these cultural nuances could compromise the accuracy and validity of motivation assessments.

Given these considerations, this study seeks to address the empirical and methodological gap by adapting and validating the Intrinsic Motivation Inventory (IMI) for Indonesian student futsal athletes. The primary aim is to ensure that the adapted version reflects both the linguistic and cultural realities of Indonesian team-sport participants while maintaining the theoretical foundation of Self-Determination Theory.

Accordingly, this research focuses on two central questions:

1. Does the adapted IMI demonstrate acceptable content validity and

internal consistency among Indonesian futsal athletes?

2. Do the interdimensional correlations within the adapted IMI align with the theoretical predictions of Self-Determination Theory in a team-sport context?

The novelty of this work lies in developing the first culturally adapted and psychometrically validated IMI for Indonesian team athletes. Theoretically, it extends the application of Self-Determination Theory to collective sport environments. Practically, it provides a reliable and culturally sensitive measurement tool for coaches, researchers, and sport psychologists to evaluate and enhance athletes' intrinsic motivation more effectively.

PARADIGM, APPROACHES, THEORIES, AND LITERATURE REVIEW

This study adopts the positive psychology paradigm, which emphasizes human strengths, growth, and optimal functioning rather than focusing on pathology or deficits. Within this paradigm, motivation is viewed as a core psychological resource that energizes behavior, supports personal development, and fosters well-being (Ryan & Deci, 2020). In sport psychology, motivation is considered essential for sustaining athletes' discipline, resilience, and long-term engagement in training and competition.

According to Self-Determination Theory (SDT), formulated by Deci and Ryan (1985, 2000), the quality of motivation depends on the fulfillment of three basic psychological needs:



autonomy, competence, and relatedness. Autonomy refers to the experience of volition and self-determination in one's actions; competence denotes a sense of effectiveness and mastery, while relatedness reflects feelings of belonging and connection to others. When these needs are satisfied, individuals act with higher intrinsic motivation, persistence, and satisfaction. Conversely, when these needs are thwarted, motivation tends to shift toward extrinsic regulation or amotivation (Ryan & Deci, 2000; Howard, Gagné, & Bureau, 2021).

The Intrinsic Motivation Inventory (IMI), developed by McAuley, Duncan, and Tammen (1989) operationalizes SDT by translating these theoretical needs into measurable subscales. The Interest-Enjoyment subscale captures intrinsic pleasure and emotional engagement (relatedness), Perceived Competence measures the sense of capability and skill mastery (competence), and Effort-Importance reflects persistence and self-endorsed effort (autonomy). In contrast, Pressure-Tension functions inversely, representing diminished autonomy and heightened psychological strain (Ryan & Deci, 2000; Gillet et al., 2013). Thus, IMI provides a multidimensional measure that connects SDT's theoretical structure with observable motivational experiences.

Previous studies have demonstrated the IMI's solid psychometric reliability across different cultures, yet inconsistencies in factor structures and item interpretations remain (Chen et al., 2022; He, Van de Vijver, & Tamis-LeMonda, 2022). Cultural and linguistic nuances often alter how respondents perceive key terms such as

"enjoyment" or "pressure." In Asian contexts, collectivist values emphasizing modesty and harmony may influence responses, particularly for items assessing competence and tension (Sari & Pradana, 2021).

Furthermore, most prior validations have been conducted in individual sports such as swimming or athletics, where motivation is primarily self-oriented. In team sports, however, motivational dynamics are more socially interdependent, shaped by cooperation, shared goals, and team cohesion (Evans, Eys, & Bruner, 2013). In the Indonesian context, studies on intrinsic motivation and IMI adaptation remain scarce, especially for team sports. The lack of a culturally validated IMI tailored for Indonesian athletes presents a methodological and empirical gap.

Cultural factors such as humility, collective responsibility, and interpersonal harmony may influence athletes' interpretations of IMI items (Brislin, 1986; Suwartono, 2023). Hence, this research aims to adapt and validate the IMI for Indonesian student futsal athletes through a rigorous cross-cultural process, ensuring linguistic accuracy, conceptual relevance, and theoretical consistency with SDT. This revalidation contributes not only to a culturally grounded measurement tool but also extends SDT's applicability in collectivist, team-based environments.



Table 1.
Conceptual Table

Self-Determination Theory (SDT) Needs	IMI Dimension	Expected Outcomes in Futsal Context
Competence	Perceived Competence	Confidence, mastery, technical growth
Autonomy	Effort- Importance	Voluntary engagement, persistence
Relatedness	interest- Enjoyment	Team cohesion, enjoyment, flow experience
Pressure (inverse)	Pressure- Tension	Lower intrinsic motivation, performance anxiety

METHOD

This study employed a quantitative research design using an instrumental adaptation and validation approach. The aim was to adapt the Intrinsic Motivation Inventory (IMI) for Indonesian student futsal athletes and to test its psychometric properties. The design followed the cross-cultural instrument adaptation guidelines proposed by Brislin (1986) and the International Test Commission (2017), emphasizing linguistic accuracy, conceptual equivalence, and empirical verification.

The adaptation of the IMI was carried out in several stages to ensure semantic and cultural equivalence. First, two bilingual translators independently translated the original English version into Indonesian. One translator had expertise in sport psychology, while the other had a linguistic background. The two translated versions were compared and synthesized

into a single unified version through consensus. Next, two independent translators who were not involved in the first phase conducted a back-translation into English to check for consistency and potential meaning shifts.

The synthesized Indonesian version was then reviewed by three expert judges in psychology and sport psychology, who evaluated each item based on relevance, cultural appropriateness, and conceptual clarity. After expert revision, a readability test was conducted with nine student-athletes to assess the clarity of instructions and item comprehension. Minor wording modifications were made based on participant feedback. Finally, the revised version was administered to futsal athletes from various universities across Indonesia for pilot testing and psychometric analysis.

Participants in this study were 61 student futsal athletes consisting of 49 males and 12 females, aged between 17 and 25 years ($M = 20.1$, $SD = 1.8$). They were recruited from ten universities in Indonesia, including the State University of Jakarta (UNJ), Trisakti University, AKORNAS, Gunadarma University, and IPB University. The inclusion criteria required that participants were active university students, regularly participated in futsal training or competitions, had at least one year of playing experience, and voluntarily provided informed consent. The selection process employed purposive sampling to ensure that participants met the study's eligibility standards.



The data were collected through an online survey distributed via Google Forms. Participants first received an explanation of the study's objectives, confidentiality assurances, and their rights to withdraw without penalty. Electronic informed consent was obtained before filling out the questionnaire. The research was conducted in compliance with the ethical guidelines of the Indonesian Psychological Association (HIMPSSI) and the Declaration of Helsinki (2013). All responses were anonymous and stored securely for research purposes only.

The data were analyzed using SPSS version 26. Content validity was assessed using Aiken's V coefficient (Aiken, 1985) based on expert evaluations. Internal consistency was examined using Cronbach's Alpha and item-total correlations. Items with Aiken's V values above .75 and item-total correlations greater than .30 were considered acceptable indicators of validity and reliability. Descriptive statistics, including mean and standard deviation, were calculated for each subscale, while Pearson correlation analysis was employed to examine interdimensional relationships between IMI subscales.

Before the main analyses, normality and outlier tests were performed to ensure data quality. The results showed that all IMI items met the minimum standards of content validity and internal consistency, confirming that the Indonesian version of the IMI was conceptually appropriate and psychometrically sound for measuring intrinsic motivation among futsal athletes.

RESULTS AND DISCUSSION

Result

Before the main analysis, data screening procedures were performed to ensure that the dataset met analytical assumptions. The Kolmogorov–Smirnov test showed that the data were normally distributed ($p > .05$), and Mahalanobis distance analysis indicated no significant outliers ($p < .001$). Thus, the data were suitable for parametric analyses. Descriptive statistics showed that the overall mean score of intrinsic motivation among futsal athletes was 83.6 ($SD = 8.4$), indicating a generally high motivational level.

Content validity was assessed by three experts in sport and psychology. The results demonstrated that all items achieved acceptable Aiken's V values ranging from .75 to .92, with an overall mean of .85, exceeding the recommended minimum value of .70. This suggests that the items were considered conceptually relevant, clearly worded, and culturally appropriate for Indonesian athletes.

Reliability testing using Cronbach's Alpha indicated excellent internal consistency. The total IMI scale produced an alpha of .91, while the four subscales ranged from .80 to .89. Item–total correlations exceeded the .30 benchmark, confirming that each item contributed meaningfully to its respective construct.

Table 2.
Reliability Coefficients of the
Indonesian IMI (N = 61)

Subscale	No. of Items	Cronbach's α	Total Correlation (r)
Interest– Enjoyment	5	.84	.47 – .64
Perceived Competence	5	.89	.49 – .63
Effort– Importance	4	.82	.46 – .58
Pressure– Tension	4	.80	.32 – .56
Total Scale	18	.91	.32 – .64

Note. $\alpha \geq .70$ = acceptable; $\alpha \geq .80$ = good internal consistency.

To evaluate construct validity, an Exploratory Factor Analysis (EFA) was conducted using principal axis factoring with varimax rotation. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was .83, and Bartlett's test of sphericity was significant ($\chi^2(153) = 812.34, p < .001$), indicating that the data were suitable for factor analysis. Four factors with eigenvalues greater than 1 were extracted, explaining 68.2% of total variance, which aligns with the theoretical four-dimensional structure of the IMI—Interest–Enjoyment, Perceived Competence, Effort–Importance, and Pressure–Tension.

Intercorrelation analysis among subscales revealed significant positive relationships between the three intrinsic motivation components ($r = .58-.64, p < .01$), while Pressure–Tension correlated negatively with all other subscales ($r = -.35$ to $-.41, p < .05$). This supports SDT's theoretical model that intrinsic

motivation components reinforce one another, whereas psychological tension diminishes intrinsic engagement.

Discussion

The findings indicate that the Indonesian version of the Intrinsic Motivation Inventory (IMI) is a reliable and valid instrument for assessing intrinsic motivation among student futsal athletes. The four-factor solution obtained from the EFA replicates the theoretical structure proposed by McAuley, Duncan, and Tammen (1989) and aligns with the principles of Self-Determination Theory (SDT) (Deci & Ryan, 1985, 2000). The strong internal consistency ($\alpha = .91$) and high expert agreement (Aiken's $V = .85$) affirm the robustness and cultural appropriateness of the adapted instrument.

The observed negative correlations between the Pressure–Tension subscale and other motivational dimensions support SDT's assumption that psychological strain and external pressure inhibit intrinsic engagement. This pattern mirrors findings from Gillet et al. (2013), who reported similar results among French athletes, and Sari and Pradana (2021), who observed that perceived pressure reduced intrinsic motivation among Indonesian individual-sport athletes. By confirming this relationship within a team-sport context, the present study demonstrates that intrinsic motivation remains a key driver even in highly interdependent environments such as futsal.

These findings also validate He, Van de Vijver, and Tamis-LeMonda's (2022) argument that culturally adapted instruments must preserve conceptual



equivalence while reflecting local meaning. In Indonesian culture, motivation is often expressed through collective satisfaction, social harmony, and group success rather than purely individual achievement. Thus, the positive association among enjoyment, effort, and competence reflects both personal and interpersonal dimensions of intrinsic motivation.

Theoretically, this study reinforces SDT's universality by demonstrating that the psychological needs for competence, autonomy, and relatedness operate consistently across cultures but may manifest differently in collectivist settings. Practically, the results provide a valuable tool for coaches, sport psychologists, and athletic trainers. The validated IMI can help identify athletes' motivational profiles, enabling tailored interventions that enhance intrinsic engagement and performance sustainability. Encouraging athlete autonomy, providing positive feedback, and fostering team cohesion can strengthen motivation and overall well-being.

In conclusion, this study contributes to the advancement of measurement development in Indonesian sport psychology by producing a culturally validated, psychometrically sound version of the IMI. Beyond supporting SDT empirically, it closes a methodological gap by extending motivational assessment into team-based sport contexts. Future studies are encouraged to employ Confirmatory Factor Analysis (CFA) and longitudinal designs to verify the stability and predictive validity of the instrument across diverse athlete populations.

CONCLUSION

The present study established that the Indonesian version of the Intrinsic Motivation Inventory (IMI) demonstrates strong psychometric properties and theoretical coherence within the framework of Self-Determination Theory (SDT). The emergence of the four-factor structure Interest–Enjoyment, Perceived Competence, Effort–Importance, and Pressure–Tension confirms that intrinsic motivation among futsal athletes is a multidimensional psychological construct characterized by enjoyment, perceived mastery, and self-directed effort, moderated by psychological pressure. This finding underscores that athletes' motivation to engage in futsal arises not merely from external rewards but from internal psychological satisfaction and the fulfillment of basic needs for competence, autonomy, and relatedness.

Scientifically, this research fills a critical gap in Indonesian sport psychology by providing a culturally validated and statistically robust measurement tool for assessing intrinsic motivation in team-sport contexts. Previous adaptations of the IMI in Indonesia primarily focused on individual athletes, leaving a void in understanding collective motivational dynamics. By confirming that the IMI retains its theoretical integrity when applied to futsal, a highly cooperative and interdependent sport, this study extends the cross-cultural applicability of SDT and advances the methodological precision of motivation research in non-Western settings.



Practically, the validated Indonesian IMI serves as an evidence-based instrument for coaches, sport psychologists, and researchers to assess and enhance athletes' intrinsic motivation. Its application can guide the development of autonomy-supportive coaching strategies, reduce psychological tension, and promote sustainable motivation and performance. Future studies are recommended to employ Confirmatory Factor Analysis (CFA) to verify construct stability, test predictive validity in various sports, and integrate the IMI within longitudinal frameworks to explore motivational changes across competitive seasons. By doing so, future research can further deepen our understanding of how intrinsic motivation operates across different cultural, sport, and developmental contexts.

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