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# Translation and psychometric validation of the indonesian version of the attention control scale (ATTC) in the context of basketball

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**Abstract**

Attention control is vital for athletic performance, particularly in high-pressure situations requiring quick decisions and sustained focus. The Attention Control Scale (ATTC) is a concise self-report measure of attentional skills, yet no validated Indonesian version exists—limiting sport psychology assessment in the country. This study translated the ATTC into Indonesian using a forward–backward translation procedure and evaluated its psychometric properties among 300 collegiate basketball athletes in Pekanbaru, Indonesia. Data were collected via online and offline self-administered questionnaires and analysed with SPSS 26 and AMOS 24, including descriptive statistics, internal consistency, test–retest reliability, and confirmatory factor analysis (CFA). CFA confirmed the two-factor structure—Focusing Attention and Shifting Attention—with good fit indices (CFI = 0.93; TLI = 0.91; RMSEA = 0.065; SRMR = 0.057). The scale showed strong internal consistency (α = 0.86) and high test–retest reliability (ICC = 0.89). While the ATTC is a self-report tool and not a substitute for objective tests, it offers a practical, culturally adapted instrument for coaches, sport psychologists, and educators to assess and enhance athletes' attentional readiness.

**Keywords:** Validation, reability, control attention, basketball.

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**Authors contribution:** a – Preparing concepts; b – Formulating methods; c – Conducting research; d – Processing results; e – Interpretation and conclusions; f - Editing the final version.

## INTRODUCTION

Attentional control is a fundamental cognitive ability that allows individuals to focus on relevant information while suppressing distractions (Basanovic et al., 2017; Burgoyne & Engle, 2020). In sports, this capacity is essential for maintaining focus on task-relevant cues—such as targets or tactical signals—while ignoring irrelevant or disruptive stimuli like crowd noise or intrusive thoughts (Gao & Zhang, 2023). Previous research has

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demonstrated that attentional control is strongly linked to athletic performance (Ducrocq et al., 2016; Furley & Wood, 2016; Gao & Zhang, 2023; Vaughan & Laborde, 2021), particularly in sports requiring precision under pressure, including shooting, throwing, and other target-based tasks (Bu et al., 2019; Englert et al., 2021). Cognitive demand measures have also been recognised as valid indicators of psychological stress in training contexts across multiple sports (Perrey, 2022), further underscoring their importance not only for performance monitoring but also for athlete well-being.

Basketball is among the most cognitively demanding and fast-paced team sports, requiring athletes to monitor multiple moving targets, process complex visual information, and make rapid, high-stakes decisions (Gutiérrez-Capote et al., 2024; Mancı et al., 2023). Effective attentional control in basketball is critical for executing accurate shots, responding to deceptive cues, and avoiding costly tactical errors (Sirnik et al., 2022; Jin et al., 2020; Güldenpenning et al., 2020). Conversely, deficits in attentional regulation can impair performance and increase injury risk (Calero et al., 2016). These demands create a practical need for reliable and valid assessment tools that can evaluate athletes' ability to manage attention under dynamic, competitive conditions.

The Attention Control Scale (ATTC), developed by Derryberry and Reed (2002), is a widely used self-report instrument for measuring attentional control. It assesses two key dimensions of attention regulation—shifting attention (flexibility to change focus between tasks) and focusing attention (ability to sustain focus on a single task) (Khodami et al., 2024). The ATTC consists of 20 items and has been translated into several languages, showing strong internal consistency, construct validity, and cross-cultural applicability (Fajkowska & Derryberry, 2010; Filgueiras et al., 2015).

Compared to performance-based assessments such as the Continuous Performance Test (CPT)—which requires prolonged computerised monitoring (Ord et al., 2021)—or the Stroop Task, which


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demands specialised software and controlled laboratory settings (Lautenbach et al., 2025), the ATTC offers a cost-effective, time-efficient, and accessible alternative (Clarke & Todd, 2021; Judah et al., 2020). Its self-report format eliminates the need for specialised equipment, reduces administration time, and allows large-scale assessments to be conducted in real-world sport environments without disrupting training schedules. These advantages make the ATTC particularly well-suited for applied sport settings, especially team sports like basketball, where assessments must be both practical and minimally intrusive.

Despite its strengths, the ATTC has rarely been applied in sports research, with most studies focusing on general or clinical populations applications (Judah et al., 2020; Khodami et al., 2024). Existing cross-cultural adaptations, such as those in Brazil and Poland, have not evaluated its use among athletes (Fajkowska & Derryberry, 2010; Filgueiras et al., 2015). In Indonesia, there is currently no validated version of the ATTC for sport-specific contexts. This gap limits the accuracy of psychological profiling and the development of targeted mental training interventions for competitive athletes.

While the relationship between attention and athletic performance has been explored in various contexts (Feria-Madueño et al., 2024; Fetean et al., 2020; Igor & Grosul, 2022), no study has systematically examined attentional control in Indonesian basketball players using a validated, culturally adapted instrument. To address this gap, the present study aims to translate, culturally adapt, and evaluate the psychometric properties of the ATTC in Indonesian basketball. By providing a reliable and culturally relevant tool, the study will support coaches, sport psychologists, and researchers in monitoring cognitive readiness, designing evidence-based mental skills training, and enhancing competitive performance. Additionally, the findings will contribute to the broader understanding of attentional mechanisms in sport and open avenues for future research on cognitive control, stress regulation, and performance optimisation.


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## METHOD

### Study Design

This cross-sectional study aimed to translate, culturally adapt, and psychometrically validate the Indonesian version of the Attention Control Scale (ATTC) for basketball athletes, following international guidelines (Mishu et al., 2023). The process involved forward translation by two bilingual translators—one with expertise in sport psychology and one without prior knowledge of the scale—followed by synthesis into a single version through consensus discussions. This was back-translated by two independent bilingual translators who were blinded to the original, ensuring semantic and conceptual equivalence.

An expert committee comprising six members (two sport psychologists, one cognitive psychologist, one linguist, one professional basketball coach, and one psychometrics expert) reviewed the pre-final version for clarity, accuracy, and cultural relevance, adjusting idiomatic expressions to fit Indonesian linguistic norms. Pretesting was then conducted with 30 basketball athletes (15 male, 15 female) using cognitive interviews to identify unclear items, leading to minor wording refinements, such as replacing complex psychological terms with sport-related expressions for better comprehension.

### Translation and Adaptation

The cultural adaptation and translation of the Attention Control Scale (ATTC) followed five systematic steps, in accordance with the procedures recommended by Khan et al. (2022). These steps were designed to ensure semantic, conceptual, and cultural equivalence between the original English version and the Indonesian version of the instrument.


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**Table 1.** Cross-Cultural Adaptation Practices ATTC

| Stage | Description |
|---|---|
| 1 | Forward translation<br>Two independent bilingual translators, both fluent in English and Indonesian with academic backgrounds in psychology, translated the original ATTC from English into Indonesian independently. This ensured that psychological terminology was accurately conveyed while maintaining contextual relevance for Indonesian athletes. |
| 2 | Synthesis<br>The two translated versions were then reviewed and synthesized into a single preliminary version. Discrepancies between the two versions were discussed and resolved through consensus between the translators, resulting in a unified draft that best reflected the intent of the original items while using natural Indonesian language. |
| 3 | Back-translation<br>To check for inconsistencies and potential loss of meaning, the synthesized Indonesian version was back-translated into English by two different bilingual translators who were unfamiliar with the original ATTC. This blind back-translation ensured objectivity and allowed comparison with the original to assess conceptual equivalence. |
| 4 | Expert Judgement<br>An expert panel consisting of psychologists, linguists, and sports science professionals evaluated all translated items. They assessed semantic, idiomatic, experiential, and conceptual equivalence. Minor adjustments were made based on their recommendations to improve clarity, cultural appropriateness, and sport-specific relevance. |
| 5 | Pre-Test<br>The pre-final version was tested with fifteen university-level basketball players. Participants were asked to complete the scale and provide feedback on the clarity, comprehension, and relevance of each item. Based on this feedback, a few minor wording changes were made to enhance item clarity and ensure that all items were well understood by the target population. |

## Participants

Purposive sampling was used to choose the study's subjects, who were amateur basketball players at a university in Pekanbaru, Riau. The selection of participants was predicated on their active participation in athletic training and competition at the collegiate level.

**Table 2.** Criteria for Inclusion and Exclusion

| Criteria | Description |
|---|---|
| Inclusion | - Aged between 17 and 25 years<br>- Minimum of 1 year of consistent basketball training experience<br>- Actively participating in university-level basketball teams<br>- Represented their university in regional or provincial inter-university competitions<br>- Provided written informed consent to participate voluntarily |
| Exclusion | - Currently undergoing treatment for psychological or neurological conditions<br>- Diagnosed with cognitive, psychological, or neurological disorders that may affect attentional performance |
| Level of Competition | The participants were amateur athletes competing in university-level tournaments held at the regional and provincial levels. These events are officially organized by collegiate sports associations and reflect a structured and competitive environment within Indonesian amateur sport. |

This study involved 300 basketball players from a single university in Pekanbaru, Riau. Given that the ATTC has 20 questions, this amount satisfies the minimum need for psychological instrument validation, which is 10–15 responders per item (Anthoine et al., 2014).


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### Instruments

The Attention Control Scale (ATTC) is a 20-item self-report instrument developed by Derryberry and Reed (2002) to assess individuals' ability to focus and shift attention. It consists of two subscales—Focusing Attention and Shifting Attention—with responses rated on a 4-point Likert scale (1 = Almost never to 4 = Almost always). Total scores range from 20 to 80, with higher scores reflecting better perceived attentional control.

The original validation by Derryberry and Reed (2002) demonstrated strong internal consistency (Cronbach's α = 0.88) and supported construct validity through correlations with anxiety regulation. In Poland, Fajkowska and Derryberry (2010) reported high reliability (α = 0.86) and significant convergent validity with temperament dimensions, arousal, and emotionality. Similarly, the Brazilian adaptation by Filgueiras et al. (2015) showed acceptable internal consistency (α = 0.82) and a one-factor solution consistent with theoretical expectations.

### Data Collection

Data collection was conducted over a three-month period, from April to June 2024. Prior to data collection, ethical approval was obtained from the Institutional Review Board of Universitas Islam Riau (Approval No. 388/079/PE/2024). All participants were informed of the purpose, procedures, and voluntary nature of the study. Written informed consent was obtained from each participant prior to their participation.

The data were collected using a structured questionnaire that was distributed through both online and offline formats. The online version was created using Google Forms and shared via email and WhatsApp, while the offline version was administered in person during scheduled training sessions. The questionnaire included the Indonesian version of the ATTC as well as demographic questions, including age, gender, and years of basketball training experience. Participants completed the questionnaire individually in a quiet environment, and researchers were available to answer any questions in the offline setting.


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## Data Analysis

The data were analyzed using IBM SPSS Statistics version 26 and AMOS version 24. Descriptive statistics were first employed to summarize the distribution of items and demographic characteristics of the respondents. To examine the internal consistency of the measurement instrument, Cronbach's Alpha coefficients were calculated, with values above 0.70 indicating acceptable reliability. Furthermore, item–total correlations were computed to evaluate the contribution of each item to the overall scale.

To explore the underlying factor structure of the instrument, an Exploratory Factor Analysis (EFA) was conducted using Principal Component Analysis (PCA) with Varimax rotation. This was followed by a Confirmatory Factor Analysis (CFA) using the Maximum Likelihood method to assess the model fit. The model's adequacy was evaluated based on several fit indices, including the Comparative Fit Index (CFI ≥ 0.90), Root Mean Square Error of Approximation (RMSEA < 0.08), and Standardized Root Mean Square Residual (SRMR ≤ 0.08). In addition, test–retest reliability was assessed by administering the instrument twice to a subset of 30 athletes with a two-week interval, and the Intraclass Correlation Coefficient (ICC) was computed to determine temporal stability.

# RESULT

## Participant Characteristics

Three hundred university-based amateur basketball players took part in the study. According to the data, most of the responders were athletes between the ages of 20 and 22, had played for three to four years, and had competed in official events. Table 4 shows the distribution by age, gender, and level of playing experience.


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**Table 3.** Respondent characteristics (N = 300)

| Characteristics | Category | Frequency (n) | Percentage (%) |
|---|---|---|---|
| **Gender** | Male | 170 | 56.7% |
| | Female | 130 | 43.3% |
| **Age** | 17–19 | 94 | 31.3% |
| | 20–22 | 153 | 51.0% |
| | 23–25 | 53 | 17.7% |
| **Playing Experience** | 1–2 | 88 | 29.3% |
| | 3–4 | 142 | 47.3% |
| | ≥5 | 70 | 23.3% |
| **Have Competed?** | Yes | 255 | 85.0% |
| | No | 45 | 15.0% |

## Descriptive Statistics

The distribution of data on each item of the Indonesian version of the ATTC was evaluated using descriptive statistical analysis. All skewness and kurtosis values fall within the normal range (−2 to +2), according to the results, suggesting that the data is normally distributed and appropriate for additional study.

**Table 4.** Descriptive statistics and total item correlation ATTC (N = 300)

| No | Item Statement (English-Indonesia) | Mean | SD | Skew | Kurtosis | Total-Item Correlation | α Item Deleted |
|---|---|---|---|---|---|---|---|
| 1 | I am easily distracted by noises or other things around me (Saya mudah terganggu oleh suara-suara di sekitar saya) | 3.10 | 0.71 | -0.52 | -0.13 | 0.52 | 0.85 |
| 2 | I have a hard time maintaining my focus on something over time (Saya kesulitan mempertahankan perhatian pada satu hal untuk waktu yang lama) | 2.95 | 0.68 | -0.31 | -0.45 | 0.47 | 0.85 |
| 3 | I can quickly shift my attention from one thing to another (Saya bisa mengalihkan perhatian saya dengan cepat dari satu hal ke hal lain) | 3.02 | 0.69 | -0.38 | -0.22 | 0.60 | 0.84 |
| 4 | It's hard for me to refocus once my attention is diverted (Saya sulit untuk kembali fokus ketika perhatian saya teralihkan) | 2.89 | 0.70 | -0.21 | -0.30 | 0.56 | 0.84 |
| 5 | I am able to stay focused on a task even when there are distractions (Saya mampu tetap fokus pada tugas meskipun ada gangguan) | 3.11 | 0.66 | -0.44 | -0.15 | 0.65 | 0.83 |
| 6 | I often lose track of what I'm doing while working (Saya mudah kehilangan fokus saat sedang bekerja) | 2.87 | 0.72 | -0.19 | -0.36 | 0.51 | 0.85 |
| 7 | I can adjust my focus depending on what the situation requires (Saya dapat menyesuaikan fokus saya tergantung pada kebutuhan situasi) | 3.09 | 0.68 | -0.36 | -0.12 | 0.59 | 0.84 |
| 8 | I find it hard to ignore unwanted thoughts (Saya kesulitan mengabaikan pikiran yang mengganggu) | 2.83 | 0.73 | -0.15 | -0.42 | 0.45 | 0.86 |


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| No | Item Statement (English-Indonesia) | Mean | SD | Skew | Kurtosis | Total-Item Correlation | α Item Deleted |
|---|---|---|---|---|---|---|---|
| 9 | I can concentrate even in a noisy environment (Saya bisa berkonsentrasi bahkan dalam lingkungan yang bising) | 2.97 | 0.69 | -0.33 | -0.23 | 0.58 | 0.84 |
| 10 | I lose interest quickly in things that require sustained attention (Saya cepat kehilangan minat terhadap hal-hal yang membutuhkan perhatian.) | 2.88 | 0.74 | -0.18 | -0.41 | 0.42 | 0.86 |
| 11 | I can redirect my attention back when I start to daydream (Saya dapat mengarahkan kembali perhatian saya jika saya mulai melamun) | 3.05 | 0.65 | -0.46 | -0.17 | 0.61 | 0.84 |
| 12 | I have difficulty staying focused on boring tasks (Saya merasa sulit untuk tetap fokus pada tugas yang membosankan) | 2.91 | 0.73 | -0.26 | -0.39 | 0.49 | 0.85 |
| 13 | I am good at switching my attention between tasks (Saya mampu berpindah fokus secara efisien di antara berbagai tugas) | 3.08 | 0.64 | -0.41 | -0.10 | 0.66 | 0.83 |
| 14 | I can stay calm and focused under pressure (Saya bisa tetap tenang dan fokus di bawah tekanan) | 3.06 | 0.65 | -0.43 | -0.16 | 0.63 | 0.83 |
| 15 | I am easily distracted by my own thoughts (Saya mudah terdistraksi oleh pikiran saya sendiri) | 2.80 | 0.72 | -0.10 | -0.35 | 0.44 | 0.86 |
| 16 | I can filter out irrelevant information effectively (Saya dapat menyaring informasi yang tidak relevan dengan cukup baik) | 3.09 | 0.67 | -0.40 | -0.18 | 0.62 | 0.84 |
| 17 | I have trouble focusing when I'm anxious or worried (Saya sulit fokus saat sedang cemas atau khawatir) | 2.86 | 0.74 | -0.20 | -0.37 | 0.48 | 0.85 |
| 18 | I can stay focused for long periods when I really need to (Saya bisa tetap berkonsentrasi untuk waktu yang lama jika saya benar-benar perlu) | 3.14 | 0.63 | -0.47 | -0.14 | 0.69 | 0.83 |
| 19 | I often get caught up in my own thoughts while working on a task (Saya sering terjebak dalam pikiran saya sendiri saat melakukan tugas) | 2.85 | 0.73 | -0.17 | -0.33 | 0.46 | 0.85 |
| 20 | I am able to manage my attention well in competitive situations (Saya bisa mengatur perhatian saya dengan cukup baik dalam situasi kompetitif) | 3.12 | 0.65 | -0.50 | -0.13 | 0.67 | 0.83 |

## Internal Consistency

Very strong internal consistency is indicated by the 20 items' combined Cronbach's Alpha value of 0.86. The alpha value did not significantly increase when any item was eliminated, suggesting that every item is in line with the scale as a whole.


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**Table 5.** Total item correlation and cronbach's alpha if items are removed (N = 300)

| Item | Item-Total Correlation | α if Item is Deleted |
|---|---|---|
| Item 1 | 0.52 | 0.85 |
| Item 2 | 0.47 | 0.85 |
| Item 3 | 0.60 | 0.84 |
| Item 4 | 0.56 | 0.84 |
| Item 5 | 0.65 | 0.83 |
| Item 6 | 0.51 | 0.85 |
| Item 7 | 0.59 | 0.84 |
| Item 8 | 0.45 | 0.86 |
| Item 9 | 0.58 | 0.84 |
| Item 10 | 0.42 | 0.86 |
| Item 11 | 0.61 | 0.84 |
| Item 12 | 0.49 | 0.85 |
| Item 13 | 0.66 | 0.83 |
| Item 14 | 0.63 | 0.83 |
| Item 15 | 0.44 | 0.86 |
| Item 16 | 0.62 | 0.84 |
| Item 17 | 0.48 | 0.85 |
| Item 18 | 0.69 | 0.83 |
| Item 19 | 0.46 | 0.85 |
| Item 20 | 0.67 | 0.83 |

All of the ATTC scale's items have item-total correlations above 0.40, the lowest threshold frequently employed in psychometric research, according to the findings of the internal reliability analysis (Ntumi & Twum Antwi-Agyakwa, 2022). This suggests that every item consistently assesses the attention control construct and makes a sufficient contribution to the overall score. Furthermore, no single item significantly decreased or boosted the scale's general dependability, as indicated by Cronbach's alpha values (α if an item was omitted) ranging from 0.83 to 0.86. Since all 20 items satisfied the requirements for strong and stable internal consistency, they were therefore considered appropriate for inclusion in the Indonesian version of the ATTC. These results show that the scale has strong internal dependability among Indonesian basketball players and support the instrument's original form.

**Confirmatory Factors Analysis (CFA)**

Confirmatory Factor Analysis (CFA) was conducted to examine whether the Indonesian version of the Attention Control Scale (ATTC) retains the original two-factor structure—Focusing Attention and Shifting Attention—as theoretically proposed by Derryberry and Reed (2002). This


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analysis was theory-driven and not exploratory in nature. The CFA was performed using the Maximum Likelihood estimation method with AMOS version 24. As presented in Table 7, multiple model fit indices indicated that the hypothesized two-factor model demonstrated a good fit with the observed data, supporting the cross-cultural structural validity of the ATTC in the Indonesian sport context.

**Table 6.** An overview of the Model Fit Index CFA

| Index | Score | Eligibility Criteria |
|---|---|---|
| Chi-square/df | 2.34 | < 3 = good |
| CFI | 0.93 | ≥ 0.90 = good |
| TLI | 0.91 | ≥ 0.90 = good |
| RMSEA | 0.065 | ≤ 0.08 = good |
| SRMR | 0.057 | ≤ 0.08 = good |

Every fit index that was produced is within the acceptable range, which is CFI and TLI ≥ 0.90, RMSEA and SRMR ≤ 0.08, and chi-square/df ratio < 3. This suggests that the two-factor model of the Indonesian version of the ATTC is statistically acceptable and has sufficient structural validity. The structure of the Focusing Attention and Shifting Attention of the Indonesian translation can thus reflect the two sub-components of the attention control aspect in the Indonesian basketball athlete population reliably, as indicated by the CFA findings. These results support the instrument's cultural relevance and show that the original factor structure remains stable with minimal modification.

**Factor Loadings**

The factor loadings (standardized factor loadings) of each item on the latent factor are presented in Table 8. All items meet the criterion of validity of the indicator and it contributes substantially to the standardized measured variable (loadings between 0.54 and 0.72) (Hair et al., 2019).


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**Table 7.** Factor Loading Scores ATTC (CFA, N = 300)

| Item | Factor | Loading |
|---|---|---|
| Item 1 | Shifting Attention | 0.62 |
| Item 2 | Focusing Attention | 0.59 |
| Item 3 | Shifting Attention | 0.64 |
| Item 4 | Shifting Attention | 0.61 |
| Item 5 | Focusing Attention | 0.70 |
| Item 6 | Focusing Attention | 0.58 |
| Item 7 | Shifting Attention | 0.63 |
| Item 8 | Focusing Attention | 0.56 |
| Item 9 | Focusing Attention | 0.65 |
| Item 10 | Focusing Attention | 0.54 |
| Item 11 | Shifting Attention | 0.68 |
| Item 12 | Focusing Attention | 0.55 |
| Item 13 | Shifting Attention | 0.71 |
| Item 14 | Focusing Attention | 0.69 |
| Item 15 | Focusing Attention | 0.57 |
| Item 16 | Focusing Attention | 0.66 |
| Item 17 | Focusing Attention | 0.60 |
| Item 18 | Focusing Attention | 0.72 |
| Item 19 | Focusing Attention | 0.59 |
| Item 20 | Shifting Attention | 0.70 |

With loading estimates of 0.54–0.72, the CFA findings reveal that all items in the Indonesian version of the ATTC have strong model fits (standardised factor loadings) for its associated construct. According to Hair et al. (2019) criteria, a loading value greater than 0.50 is considered adequate and indicates that the item contributes reasonably well to the construct being measured.

Loading values for those that measured focusing attention were between 0.54 (Item 10) and 0.72 (Item 18). That is, the scale has acceptable and equivalent indicators of individuals' attention capacity and focus on tasks. Likewise, the loading coefficients of the items that compound the construct Shifting Attention, oscillate between 0.61 (Item 4) and 0.71 (Item 13) indicating how powerful is the contribution of each item for measuring the ability to shift attention as a function of changing demands.

The conclusion that both Focusing Attention and Shifting Attention constructs have a strong factor structure and adequate indicator validity is enhanced by the consistent loading values greater than.50 across all items. The 20 items could all be maintained in the final measurement


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model of the Indonesian version of the ATTC as there were no items with weak loadings (<0.50) that needed to be discarded. These results provide empirical support that this scale is a sound and valid measure of the two central constructs of attention regulation among Indonesian basketball players.

## Construct Validity

Convergent validity and construct reliability were the key instruments for validating construct validity. Convergent and construct dependability were ascertained using Average Variance Extracted (AVE) and Composite Reliability (CR), respectively. Standard criteria for showing the construct has strong convergent validity and construct reliability are AVE ≥ 0.50 and CR ≥ 0.70 (Hair et al., 2019). Table 9 AVE and CR of each construct from CFA results

**Table 8.** AVE and composite reliability konstruct scores ATTC (N = 300)

| Construct | Number of Items | AVE | CR |
|---|---|---|---|
| Focusing Attention | 13 | 0.52 | 0.88 |
| Shifting Attention | 7 | 0.54 | 0.85 |

The average variance extracted (AVE) of indicators on the construct is greater than the error variance, because the AVE values of both constructs is greater than the minimum criterion of 0.50. Convergent validity has thus been established. FTCO and SACO also show, in addition to convergent validity, a high level of construct dependability/internal consistency with CR values of 0.88 and 0.85 beyond the threshold of 0.70. To evaluate the dimensions of attention regulation in Indonesian basketball players the model measuring of ATTC has good construct-validity.

## Test-Retest Reliability

To assess the temporal stability of the Indonesian version of the ATTC, a test–retest reliability analysis was conducted using the Intraclass Correlation Coefficient (ICC). A total of 30 university basketball players were randomly selected to complete the ATTC at two time points, spaced two weeks apart. The analysis employed a two-way random-effects model


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with absolute agreement and single measurement, in accordance with best practices for psychometric reliability evaluation (Koo & Li, 2016).

**Table 9.** ReliabilityTest–Retest (N = 30)

| Construct | ICC (95% CI) | Interpretation |
|---|---|---|
| Focusing Attention | 0.88 (0.79 – 0.94) | High Reliability |
| Shifting Attention | 0.87 (0.77 – 0.93) | High Reliability |
| ATTC Total Score | 0.89 (0.81 – 0.95) | Very High Reliability |

These ICC values indicate that the Indonesian ATTC demonstrates strong test–retest reliability, with all coefficients exceeding the 0.75 threshold for good reliability, and approaching or surpassing the 0.90 threshold commonly interpreted as excellent (Koo & Li, 2016). The narrow confidence intervals (ranging from 0.77 to 0.95) further support the precision and consistency of repeated measurements.

This level of temporal stability suggests that the ATTC can reliably assess athletes' attentional control across time and is suitable for repeated use in longitudinal monitoring or intervention studies. Its ability to yield stable scores across multiple testing occasions confirms that the Indonesian ATTC is not overly influenced by measurement error or situational variability. Thus, the scale can be confidently applied in sport psychology settings to track cognitive readiness, evaluate mental training programs, or assess changes in attention due to psychological interventions.

## DISCUSSION

This study aimed to translate and culturally adapt the Attention Control Scale (ATTC) into Indonesian and evaluate its psychometric properties in a sample of collegiate basketball athletes. The findings confirmed that the Indonesian version of the ATTC is a valid and reliable instrument, with strong construct validity, internal consistency, and temporal stability. These results not only affirm the robustness of the ATTC in the sport context, but also underscore the value of culturally adapted psychological assessment tools for supporting evidence-based interventions—particularly in enhancing mental toughness and attentional readiness among competitive athletes.


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The Confirmatory Factor Analysis (CFA) supported the theoretical two-factor structure of the ATTC—Focusing Attention and Shifting Attention—with acceptable fit indices (CFI = 0.93, TLI = 0.91, RMSEA = 0.065, SRMR = 0.057). This structure aligns with previous validation studies in Poland and Brazil (Fajkowska & Derryberry, 2010; Filgueiras et al., 2015), reinforcing the theoretical model proposed by Derryberry and Reed (2002). These findings suggest that attentional control, as measured by the ATTC, retains its structural stability even across different cultural contexts, highlighting its potential universality in cognitive psychology and sport settings.

Further supporting the instrument's reliability, the descriptive item analysis showed that item means ranged from 2.80 to 3.14 with standard deviations between 0.63 and 0.74, indicating adequate item variability. Skewness and kurtosis values fell within ±1, meeting the assumption of normality. All item-total correlations exceeded the recommended 0.30 threshold (ranging from 0.42 to 0.69), and Cronbach's alpha if items were deleted ranged from 0.83 to 0.86. These findings indicate that every item contributed meaningfully to the total scale and that no item warranted removal. The total Cronbach's alpha coefficient of 0.86 reflects excellent internal consistency, while the test-retest reliability over one week yielded an ICC of 0.89, demonstrating the temporal stability of the scale across repeated administrations.

Although the ATTC is a self-report measure and cannot replace objective laboratory-based attention tasks (Khodami et al., 2024), its practicality makes it useful for measuring subjective perceptions of attention in applied settings. As highlighted by Clarke and Todd (2021), while self-report measures like the ATTC may not correlate strongly with behavioral metrics of attention, they remain relevant due to their associations with emotion regulation, stress response, and mental performance (Atalay et al., 2024).

The participant sample—comprising young athletes with 1 to 5 years of training in competitive environments—may have positively influenced


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the scale's performance. Exposure to high-pressure situations, distractions, and tactical demands likely contributed to the development of their attentional abilities, aligning with prior findings that athletes with extensive competitive experience tend to exhibit better attention control (Vaughan & Laborde, 2021). Moreover, the rigorous forward-backward translation procedure Mishu et al., (2023) helped ensure semantic and conceptual equivalence, strengthening both the structural and content validity of the Indonesian version. This process serves as a methodological reference for future scale adaptations in sport psychology.

Theoretically, this study adds to the growing evidence that attention management is a universal psychological process that can be reliably measured across cultures. The success of this adaptation supports the scale's use in non-clinical sport populations—particularly student athletes who are frequently the focus of long-term mental skills development programs. Practically, the Indonesian ATTC can serve as a fast, accessible, and psychometrically robust tool for coaches, sport psychologists, and educators to assess focus, flexibility, and psychological readiness. It facilitates the identification of attention-related challenges and can be used to monitor changes before and after targeted interventions.

In particular, the ATTC aligns conceptually with constructs such as mental toughness, competitive focus, and emotional resilience—all essential for optimal performance under pressure. Athletes who report higher ATTC scores are more likely to maintain concentration, shift attention appropriately, and manage stress effectively during high-stakes situations. Therefore, the scale can be used not only in psychological profiling but also to guide individualized mental training programs such as mindfulness, attentional cueing, or stress regulation interventions.

Despite these meaningful contributions, several limitations should be considered. First, the use of a single-institution sample limits the generalizability of findings to other regions, cultures, or levels of competition, potentially affecting the external validity of the scale. Second, the exclusive reliance on quantitative methods may have missed nuanced,


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qualitative aspects of attention control. Third, the study only tested a two-factor CFA model without exploring more complex structures (e.g., bifactor or hierarchical models), which might offer a deeper understanding of attentional processes. Future research should expand the sample base, integrate qualitative insights, and test alternative models to enhance theoretical generalizability and practical relevance.

In addition, future studies are encouraged to explore the relationship between ATTC scores and objective performance outcomes such as accuracy, decision-making speed, and in-game execution. The ATTC can also be used to evaluate pre- and post-intervention changes in attentional control following mental training programs. Finally, cross-validation across various sport types—such as individual versus team sports or open versus closed skill environments—would provide deeper insight into how attentional control functions under different cognitive and physical demands.

## CONCLUSION

This study translated, culturally adapted, and psychometrically validated the Indonesian version of the Attention Control Scale (ATTC) for collegiate basketball athletes. The results demonstrated strong construct validity, high internal consistency, and excellent test–retest reliability, with the two-factor structure—Focusing Attention and Shifting Attention—aligning with the original theoretical model. These findings establish the Indonesian ATTC as a robust tool for measuring attentional control in sport contexts.

As a self-report instrument, the ATTC offers a practical, time-efficient, and non-invasive option for coaches and sport psychologists to design targeted mental training programmes, monitor cognitive readiness, and evaluate psychological preparedness before key matches. Nevertheless, its reliance on subjective reporting means it should be used alongside objective or laboratory-based attention tests to provide a more comprehensive understanding of athletes' cognitive performance. Future


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research could explore its integration with behavioural and neurocognitive measures across different sports and competitive levels.

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