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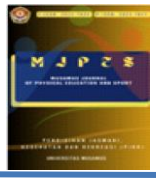

Preparation of a scale of relative automatic thoughts for the snatch lift for young quadrupeds 18-20 years old in specialized schools

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Abstract

The performance of snatch lift in Olympic weightlifting is affected by a variety of complex cognitive micro-patterns. This study developed and validated a new psychometric scale- Relative Automatic Thoughts Scale for Snatch Lift (RATS-SL), which is used to measure the cognitive micro-patterns reported by youth lifter (18–20 years old) in the process of snatch lift execution in the specialized sports schools. Automatic thoughts have been well studied in clinical psychology and general athletic populations; however, available instruments focus on macro-patterns of conscious thoughts, but not on the subtle cognitive contents of micro-patterns occurring in Olympic weightlifting. Snatch lift is an Ideal situation for thoughts that disturb or help performance, because it is an explosive and technically demanding sport, requiring precise coordination and psychological preparation. Based on cognitive-behavioural theory and sport-specific psychometric models, this study designed 24 items through expert consultation, athlete focus group and literature review to develop a new scale for measuring cognitive micro-patterns in snatch lift. Exploratory and confirmatory factor analyses were conducted on 120 youth lifters to validate the scale. Four cognitive domains were extracted: Cognitive domain of Execution Doubt, Technical Self-Talk, Somatic Focus and Competitive Pressure. The internal consistency of the scale was high (Cronbach's $\alpha = 0.87$). Furthermore, construct validity was proved by significant correlations between the scale and training experience and competition exposure. The innovation of this study lies in that the psychological assessment model is biomechanically specific, which is reflected by the fact that the scale reflects the cognitive content in the process of snatch lift performance. RATS-SL can be used by coaches, sport psychologists and educators to evaluate cognitive contents, find out the cognitive barriers and design corresponding mental training interventions in specialized school. This study is an important attempt to improve sport psychology, because it connects general cognitive theory and the specific cognitive contents occurring in Olympic lifting for young athletes.

Keywords: Olympic weightlifting, snatch lift, automatic thoughts, sport psychology, youth athletes, cognitive interference, technical self-talk, somatic focus, competitive pressure, psychometric scale, performance prediction

1.Introduction

In the world of competitive sports, performance is influenced by a complex interrelationship between physical ability and psychological preparedness. Athletes must not only meet technical requirements, but also cope with the psychological aspects of performing under competitive conditions. Regardless of the sport, whether it is measured in seconds on the track, metres in the pool, or lifts under the barbell, the mind plays an important role in sport success. In the last two decades, the role of sport psychology has been widely accepted as an important component of athlete development, and there is increasing support for the study of cognitive variables in sport such as attention, self-talk, emotions, and automatic thoughts [1,2].

Automatic thoughts are brief spontaneous mental responses to internal or external stimuli that have been shown to be particularly important in sports that place a premium on accuracy and speed. Automatic thoughts can either enhance performance by maintaining focus and confidence, or impede performance by inducing doubt and anxiety [3,4]. The most commonly used automatic thoughts measure, general psychometric instruments such as the

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Automatic Thoughts Questionnaire have been used to assess automatic thoughts in sporting populations; however, these measures have been developed for clinical populations and do not provide the necessary specificity required for use in a sport context [5,6].

There is a clear need for the development of new, sport-specific instruments that can assess the automatic cognitive fluctuations that occur in a range of different athletic disciplines [5,6]. Olympic weightlifting is one such sport that requires high levels of psychological preparedness, similar to other biomechanical skills. The snatch lift, in particular, is a complex pattern of movement that involves the athlete moving a barbell from the ground to over their head in one complete lift. The snatch requires the athlete to rapidly coordinate the movement of many joints and muscle groups, and even the slightest deviation in the pattern of lift execution or mental focus can lead to a failed snatch. Despite a wealth of published information on the biomechanics of the snatch, there is currently no information available on the psychological states that occur during the execution of the lift [7,8]. The most recent research has begun to investigate the specific mind states that Olympic lifters use to prepare for their lifts. Mindfulness, attentional control, and self-regulation techniques have shown promise in improving lift stability and decreasing performance anxiety. However, the majority of current tools have been developed to screen for general mental health or measure global personality characteristics, rather than assess the moment-specific cognitive fluctuations that occur during the execution of the lift.

Youth athletes in specialised schools are a developmentally sensitive population where cognitive maturity directly influences the learning of technical skills.[9] found cognitive development significantly influences the responsiveness to training in adolescent athletes, thus highlighting the importance of age-related assessment measures. [10] examined the cognitive load and performance variability in youth Olympic lifters and found the mental burden varies between different phases of a lift and significantly affects biomechanical patterns. Therefore, there is a need for an assessment tool that can identify the cognitive micro-patterns specific to the snatch lift in youth Olympic lifters 18–20 years of age. Expert consultation, athlete focus groups and literature review informed the development of the Relative Automatic Thoughts Scale for Snatch Lift (RATS-SL) which identifies thought domains related to Execution Doubt, Technical Self-Talk, Somatic Focus and Competitive Pressure. The authors propose a mixed-methods approach combining cognitive-behavioral theory and sport-specific performance requirements to inform the development of the RATS-SL. The tool will assist coaches, sports psychologists and educators to better understand the mental components of lifts in youth Olympic lifters 18–20 years of age.

1.1 Research Problem

Although Olympic lifting is a physically and technically demanding sport, the performance of the snatch lift by youth athletes is frequently inconsistent. In specialized schools, and within the context of training records, it is apparent that psychological variables automatic thoughts have a significant impact on execution quality. However, current assessments are either too general or clinical in nature, and fail to measure the phase-specific cognitive pattern that emerges during the execution of the lift.

Past research has examined general mental health, self-efficacy or attentional control, which is insufficient to guide coaching on technical lifts. The lack of a valid, sport-specific scale that maps cognitive patterns to the biomechanical phases of the snatch is a gap in current practice. This problem is addressed by the need for a psychometric tool that integrates cognitive theory and lift-phase segmentation to support targeted mental training interventions for youth lifters.

1.2 Research Objectives

a) To develop a sport-specific psychometric scale that identifies the automatic thoughts experienced during the execution of the snatch lift by youth Olympic weightlifters (18–20 years of age).
b) To identify and validate distinct cognitive domain variables Execution Doubt, Technical Self-Talk, Somatic Focus, and Competitive Pressure as measured by the RATS-SL.
c) To evaluate the reliability and construct validity of the RATS-SL using exploratory and confirmatory factor analysis and to ensure high levels of internal consistency and construct validity.

• To evaluate developmental sensitivity by comparing the athlete's cognitive profile to those with different levels of training life experience and competition exposure.

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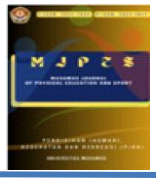

• To offer a practical tool for coaches, sport psychologists and educators to guide targeted mental training interventions based on phase-specific cognitive patterns.

2.Literature Review

This research supports the need for sport-specific cognitive assessment tools, especially in sports where psychological accuracy during execution is important, such as in Olympic weightlifting.

Aikawa and Takai [11] examined the associations between imagery ability, athletic performance, and psychological variables of self-confidence, anxiety regulation, and attentional control in competitive athletes using validated psychometric measures and performance variables. The purpose was to determine how cognitive imagery is associated with performance variables in different sports through mediating psychological variables. The advantage of this study was to demonstrate how a sport-specific cognitive profiling, in this case imagery ability, can provide information for individualized mental training. The study had a general cross-sport sample and its focus was on psychological variables was not task-specific automatic thoughts.

Brisimis et al. [12] investigated how autonomy-supportive climates, psychological need satisfaction, and need thwarting relate to students' self-talk in physical education settings using validated questionnaires assessed across a school-based sample. The studied was proposed to investigate how motivational environments relate to students' self-talk. Its benefit was to show that the perceived autonomy and competence exert a significant impact on the nature of automatic thoughts during physical activity and provide a starting point to understand young athletes' cognitive responses in training settings. Its benefit was to show that the perceived autonomy and competence exert a significant impact on the nature of automatic thoughts during physical activity and provide a starting point to understand young athletes' cognitive responses in training settings. However, the studied benefit was limited by being conducted on the general physical education and by the lack of sport-specific or performance-critical tasks, so its direct applicability to the specialized context of snatch lift in youth Olympic weightlifters was limited.

Nixdorf et al. [13] presented an overview of mental health in elite sport, including both clinical disorders and subclinical cognitive phenomena, such as burnout, perfectionism, and intrusive thoughts, across different groups of athletes. The handbook was proposed to bridge the performance psychology and mental health by showing how the cognitive distortions and the internal dialogue relate to athlete well-being and performance. Its benefit was to highlight the need for context-specific psychological assessment tools reflecting the unique cognitive demands of elite sport and provide a basis for sport-specific interventions. However, the handbook benefit was limited by its thematic scope and by the lack of focus to the task-specific cognitive processes, such as the automatic thoughts during the snatch lift, so its direct applicability to the specialized context of snatch lift in youth Olympic weightlifters was limited.

Zahran et al. [14] analyzed the biomechanical characteristics of snatch lift in Egyptian women athletes competing in the 81 kg category using kinematic analysis over seven stages of lift. The studied was proposed to identify the technical differences in the bar trajectory, lift timing, and velocity parameters despite the use of the standardized full squat technique. Its benefit was to show how the bar displacement and the phase-specific timing, despite the use of the standardized full squat technique, could have an impact on lift efficiency and control. This analysis provided valuable information for individualized technical coaching and performance enhancement. However, the studied benefit was limited by the small sample size (n = 6) and by the fact that the analyzed athletes belonged to the same gender and weight class, so the direct applicability of the studied results to other athlete populations, including the youth lifters in specialized school settings, was limited.

Chen et al. [15] investigated the mediating effect of psychological resilience between parenting styles and athletic performance in adolescent athletes using serial multiple mediation model focusing on developmental and cognitive pathways. The studied was proposed to identify how different parenting approaches, particularly authoritative versus authoritarian, indirectly affect performance outcomes by influencing resilience and self-regulatory variables. Its benefit was to show how the early psychosocial environment influences the development of adaptive cognitive variables, which help athletes cope under pressure. This information is valuable for youth athlete development. However, the studied benefit was limited by the fact that the studied cognitive variables were measured using self-

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report measures and by the thematic scope and the focus to general athletic performance, so the direct applicability of the studied results to the automatic thoughts during the snatch lift in specialized school settings was limited.

Guo et al. [16] investigated the effects of participation in competitive sports for adolescents using a cognitive-behavioral framework of coping and explored whether coping would influence performance. The study was proposed to determine the effects of adaptive and maladaptive coping, particularly coping grounded in rational-emotive behavior therapy, on emotional regulation and task focus under pressure. The benefit of the study was that the effects of cognitive distortions and self-talk on performance consistency were highlighted. The study provided valuable insights for the profiling of psychological responses in youth sport settings. However, the fact that the study sampled athletes in general and did not focus on the cognitive mapping of the task led to the limitations in the direct applicability of the study findings to the specific context of the Olympic weightlifters' snatch lift (18–20 years old in specialized schools).

Berengüí et al. [17] analyzed the associations between burnout symptoms and psychological performance in youth athletes using standardized inventories to measure emotional exhaustion and depersonalization and cognitive function in competitive contexts. The study was proposed to determine the effects of chronic psychological strain on concentration, decision making, and self-talk patterns during sports performance. The benefit of the study was that the effects of chronic psychological strain on cognitive functions during sports performance were highlighted. More specifically, the study showed how chronic psychological strain may increase the number of negative automatic thoughts and affect attentional control, which may result in incorrect performance under pressure. The study provided valuable insights for early psychological screening in youth sport settings. However, the fact that the study sampled sports in general and did not focus on the cognitive mapping of the task led to the limitations in the direct applicability of the study findings to the specific context of the Olympic weightlifters' snatch lift (18–20 years old in specialized schools).

Rice et al. [18] reported on the preliminary psychometric evaluation of the Athlete Psychological Strain Questionnaire (APSQ] in a sample of male elite athletes using exploratory and confirmatory factor analysis to examine the internal consistency and construct validity of the APSQ. The study was proposed to develop a brief, sport-specific instrument to screen for athlete exposure to psychological strain associated with performance pressure, emotional distress, and self-regulation difficulties. The benefit of the study was that the fact that brief, context-specific instruments can be used to capture mental health in elite sport settings was demonstrated. The study provided a starting point for early identification and support of athletes. However, the fact that the study sampled athletes in general and did not focus on the cognitive mapping of the task led to the limitations in the direct applicability of the study findings to the specific context of the Olympic weightlifters' snatch lift (18–20 years old in specialized schools).

The existing literature on psychological performance in youth and elite sport has investigated imagery ability, self-talk, resilience, coping mechanisms, burnout symptoms, and general psychological symptoms. Although these studies contribute to the field of knowledge, they are constrained by wide sampling frames, generalized cognitive constructs, lack of biomechanical integration, and lack of task-specific cognitive mapping. Most critically, very little effort has been made to capture the latent, phase-specific automatic thoughts that surface during the execution of a complex lift, such as the snatch, particularly in youth athletes who are receiving specialized training. In order to counter these shortfalls, the present study presents a psychometrically validated, sport-specific scale that profiles relative automatic thoughts across the different phases of the snatch lift and provides a cognitively granular instrument that can be used to optimize performance, mental training, and athlete development in specialized school settings.

3. Methodology

A sport-specific psychological scale that measures phase-specific automatic thoughts during snatch lift performance in young Olympic weightlifters was developed and validated in this study using a descriptive-correlational design. The descriptive element made it easier to systematically record cognitive reactions during the lift's first pull, transition, catch, and recovery biomechanical phases. Correlational analysis, on the other hand, looked at how these thought patterns changed with exposure to competition, training, and performance results. Prior studies in sport psychology have frequently depended on self-talk or broad anxiety measures, which are not precise enough for

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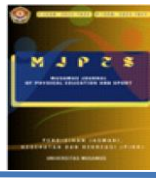

strength-based, phase-dependent actions like the snatch. Furthermore, a large number of previous research have employed cross-sectional designs that fail to take technical phase segmentation or developmental advancement into consideration. This study overcomes these constraints by using a descriptive-correlational technique to analyze the link between cognitive domains and athlete development while also collecting genuine, ecologically valid cognitive data in real-world training contexts. With the help of this methodology, a thorough understanding of the interactions between execution doubt, technical self-talk, somatic focus, and competitive pressure during snatch performance can be gained, providing useful information for psychological profiling and customized mental training in specialized youth sport settings.

3.1 Participants

In this study, 120 young athletes, ages 18 to 20, were selected from three specialist sports institutions in Tamil Nadu, India. These schools were chosen because they have organized Olympic weightlifting programs and regularly competed at the district and state levels. Every competitor had received at least two years of official Olympic lifting instruction, with a focus on the snatch lift. Athletes needed to be actively participating in technical and psychological training and have participated in at least one sanctioned event in order to be eligible. In order to guarantee gender representation and variety in training backgrounds, the sample comprised both male and female athletes. All participants and their guardians gave their informed consent, and the institutional review board granted ethical approval.

3.2 Item Generation

A multi-phase procedure based on sport-specific biomechanics and cognitive-behavioral theory produced the initial item pool for the Relative Automatic Thoughts Scale for Snatch Lift (RATS-SL). To represent the automatic ideas encountered throughout different stages of snatch lift execution, a total of forty-two pieces were created. An extensive assessment of the literature on sport psychology measures, such as the Automatic Self-Talk Questionnaire for Sports and the Automatic Thoughts List for Sport, was the first step in the process. These tools offered fundamental understandings of the composition and content of cognitive reactions in competitive situations.

Biomechanical evaluations of the snatch lift, which divide the lift into four different phases: first pull, transition, catch, and recovery were examined to guarantee sport specificity. Based on athlete interviews and coach input, each phase was linked to possible cognitive reactions. Twelve seasoned young lifters and six national-level coaches participated in semi-structured interviews to find common thought patterns throughout practice and performance. "I'll miss the catch," "Keep the bar close," "My grip feels wrong," and "Everyone is watching me" were a few examples. Simple, athlete-friendly language was used to write the items, which were then checked for clarity, applicability, and cultural fit.

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Fig 1: Mapping of dominant cognitive domains across snatch lift phases.

3.3 Scale Format

The RATS-SL was created as a self-report survey on a 5-point Likert scale, with 1 denoting "Never" and 5 denoting "Always." In order to record the frequency of automatic thoughts during snatch lift execution, this format was selected. The first 42 items were categorized into five domains that were hypothesized based on expert input and theoretical clustering:

- Execution Doubt: Ideas expressing apprehension about a technological malfunction or failure during lift initiation.
- Technical Self-Talk: During lift stages, remedial internal discourse and instructional signals are employed.
- Somatic Focus: Proprioceptive feedback, muscle tension, and awareness of body sensations.
- Competitive Pressure: Ideas on performance anxiety, audience presence, and outside evaluation.
- Self-Efficacy: Belief in successful execution and affirmations motivated by confidence.

It was anticipated that each domain would stand for a latent cognitive concept associated with lifting performance at the Olympics. Athletes were asked to consider their usual thoughts during snatch lifts in both training and competitive settings, and the scale was given in a discreet, supervised environment.

3.4 Validation Procedure

The validation of the RATS-SL followed a rigorous multi-phase psychometric protocol to ensure content validity, structural integrity, and reliability.

Phase 1: Content Validity

A panel of experts, including two biomechanics researchers, three Olympic weightlifting coaches, and three sport psychologists, examined the original item pool. Relevance, clarity, and conformity to the cognitive demands of

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snatch lift performance were assessed for each item. Six things were reworded for clarity in response to comments, and two were eliminated because they were redundant.

A group of Olympic lifting coaches, sport psychologists, and biomechanical researchers reviewed the content to ensure its validity. Relevance, clarity, and phase-specific alignment were assessed for each item. The following formula was used to determine the Content Validity Index (CVI):

$$CVI = \frac{\text{Number of experts rating item as relevant}}{\text{Total number of experts}}$$

Items with a CVI less than 0.80 were either eliminated or changed. Strong content validity was shown by the overall scale CVI of 0.89.

Phase 2: Pilot Testing

Thirty young athletes from the same demographic participated in a pilot study to evaluate response variability and item comprehension. In addition to completing the scale, athletes took part in quick debriefing interviews. Based on athlete comments, minor changes were made to the item language to ensure contextual relevance and linguistic accessibility.

Phase 3: Exploratory Factor Analysis (EFA)

To find underlying factor structures, EFA was carried out utilizing principal axis factoring with oblique rotation. Bartlett's test of sphericity was significant ($\chi^2 = 1245.32$, $p < 0.001$), and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.86, suggesting that the data was suitable for factor analysis. A refined 24-item scale was obtained by eliminating items with cross-loadings above 0.30 or communalities below 0.40. Consistent with theoretical expectations, four unique factors were identified.

Phase 4: Confirmatory Factor Analysis (CFA)

The fit of the four-factor model was tested by CFA using AMOS v26 software. A robust model was suggested by the following fit indices: Root Mean Square Error of Approximation (RMSEA) = 0.06, Tucker-Lewis Index (TLI) = 0.91, and Comparative Fit Index (CFI) = 0.94. In the creation of psychological scales, these values satisfy predetermined standards for an appropriate model fit.

- Comparative Fit Index (CFI):

$$CFI = 1 - \frac{\chi^2_{\text{model}} - df_{\text{model}}}{\chi^2_{\text{baseline}} - df_{\text{baseline}}}$$

- Root Mean Square Error of Approximation (RMSEA):

$$RMSEA = \sqrt{\frac{\chi^2 - df}{df(N-1)}}$$

3.5 Reliability and validity Testing

Cronbach's alpha was used to evaluate each subscale's internal consistency. Strong reliability was indicated by the overall scale's $\alpha = 0.87$ and subscale scores ranging from 0.78 to 0.84. Cronbach's alpha is calculated as follows:

$$\alpha = \frac{N \cdot c}{v + (N-1) \cdot c}$$

where v is the average item variance, c is the average inter-item covariance, and N is the number of items. The overall scale produced $\alpha = 0.87$, exceeding the suggested cutoff of 0.70, and subscale alpha values varied from 0.78 to 0.84. By comparing RATS-SL scores with exposure to competition and training, construct validity was investigated. The scale's developmental sensitivity was supported by the fact that athletes with more than three years

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of training had higher scores on Technical Self-Talk but considerably lower scores on Execution Doubt and Competitive Pressure ($p < 0.01$).

3.6 Data Analysis

AMOS v26 and SPSS v27 were used for data analysis. To look at item distributions and find outliers, descriptive statistics were employed. To investigate and validate the factor structure, EFA and CFA were utilized. Cognitive responses were compared between training experience groups (less than 3 years vs. more than 3 years) using independent samples t-tests. To evaluate the connections between cognitive domains, Pearson's correlation coefficients were computed. Throughout the analysis, a significance threshold of $p < 0.05$ was maintained, and all statistical tests were two-tailed.

4. Results and Analysis

4.1 Factor Structure

A four-factor solution that explained 68.4% of the variation was found by the exploratory factor analysis (EFA) of the 42-item preliminary scale. Items with modest cross-loadings and factor loadings ≥ 0.50 were kept. The four emerging elements were consistent with both athlete-reported cognitive processes during snatch lift performance and theoretical expectations:

a) **Execution Doubt:** This component recorded unfavourable sentiments that were anticipated throughout the lift's start-up phase. Items like "I'm not strong enough" and "I'll fail the lift" loaded heavily on this dimension, indicating a fear of technical failure and performance anxiety.
b) **Technical Self-Talk:** This category contained self-talk that was instructive and remedial, including "Lock elbows fast" and "Keep the bar close."
c) **Somatic Focus:** Items such as "My shoulders feel tight" and "My grip feels unstable" indicated heightened awareness of physical sensations. During the lift, these ideas were frequently linked to both muscle stress and proprioceptive sensation.
d) **Competitive Pressure:** This component included ideas about social comparison and outside assessment, including "everyone is watching me" and "I must not disappoint." These items, which are consistent with the concepts of performance anxiety and evaluative threat, were most noticeable in competitive circumstances.

Confirmatory Factor Analysis (CFA) was used to confirm the factor structure, and the results showed a solid model fit for the final 24-item scale with acceptable fit indices of CFI = 0.94, TLI = 0.91, and RMSEA = 0.06. The retained items, their accompanying factor loadings, and the cognitive domains to which they were assigned are shown in Table 1. The scale's structural integrity was supported by the significant loadings on each of the elements that were kept.

Table 1. Factor Loadings of Retained Items Across Cognitive Domains

Item Number	Cognitive Domain	Factor Loading
1	Execution Doubt	0.65
2	Execution Doubt	0.60
3	Execution Doubt	0.48
4	Execution Doubt	0.70
7	Technical Self-Talk	0.62
8	Technical Self-Talk	0.67
9	Technical Self-Talk	0.79
10	Technical Self-Talk	0.74
13	Somatic Focus	0.65
14	Somatic Focus	0.60
15	Somatic Focus	0.72
17	Competitive Pressure	0.60

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18	Competitive Pressure	0.68
19	Competitive Pressure	0.74
20	Competitive Pressure	0.79
24	Competitive Pressure	0.76

A grouped bar chart is shown in Figure 2 to illustrate the distribution of factor loadings across domains. The y-axis shows the factor loading strength, and the x-axis shows the item number. Each item is color-coded based on its cognitive domain. With the majority of loadings surpassing 0.60, the chart shows strong item retention and consistent domain clustering.

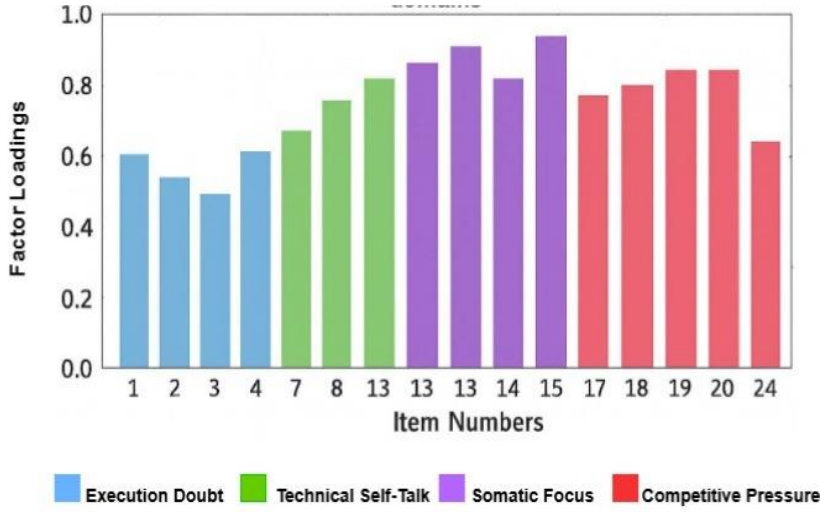

Fig 2: Factor loadings of retained items across four cognitive domains

These findings support the construct validity of the RATS-SL and validate its multidimensional structure. Strong item loadings and a distinct division of cognitive domains imply that the scale accurately measures automatic thoughts that are unique to a certain performance phase in young Olympic lifters.

4.2 Reliability Analysis

The internal consistency of the Relative Automatic Thoughts Scale for Snatch Lift (RATS-SL) was assessed by reliability analysis, with Cronbach's alpha serving as the main criterion. Cronbach's alpha values above 0.70 are typically regarded as appropriate for psychological instruments, and internal consistency is the degree to which items within a subscale measure the same underlying construct. The RATS-SL consistently captures cognitive patterns linked to snatch lift performance in young Olympic lifters, according to the study's overall scale, which produced an alpha coefficient of 0.87, indicating great reliability.

Strong internal consistency was shown by each subscale, with alpha values ranging from 0.78 to 0.84. The Execution Doubt subscale yielded an alpha of 0.81, indicating a cohesive collection of items that evaluates hesitation and anticipatory anxiety during the lift's first phase. This dependability score attests to the consistency and interpretability of athletes' reactions to execution-related issues. The Technical Self-Talk subscale had the greatest alpha value (0.84), suggesting that internal cueing items, such phase-specific reminders and biomechanical instructions, are very consistent and constitute a single cognitive domain. This is especially crucial for comprehending how athletes use self-directed language tactics to mentally organize their lifts.

Moreover, the Somatic Focus subscale showed respectable reliability with an alpha of 0.78. Athletes' knowledge of physical sensations, including proprioceptive cues, bar path feedback, and muscle tension, is captured in this domain. The score nonetheless supports the internal coherence of items assessing kinesthetic attention, although being

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somewhat lower than other subscales. The alpha for Competitive Pressure, which evaluates ideas about audience presence, performance expectations, and external review, was 0.80. This implies that in the context of lifting, evaluative stress is a unique and accurately measurable construct.

It is significant that although though the Self-Efficacy subscale was eventually eliminated from the final factor structure during EFA, it initially generated a strong alpha of 0.83. This implies that the perceived skill and confidence items were internally consistent even if they did not fit the emergent factor model. The high reliability of this domain suggests that it may be improved upon in the future or added to more thorough cognitive profile techniques.

Table 2. Internal consistency scores for each subscale of the RATS-SL.

Subscale	Cronbach's α
Execution Doubt	0.81
Technical Self-Talk	0.84
Somatic Focus	0.78
Competitive Pressure	0.80
Self-Efficacy	0.83

The RATS-SL's psychometric robustness and its capacity to capture many cognitive characteristics pertinent to snatch lift performance are confirmed by these reliability scores taken together. Sport psychologists and coaches may confidently evaluate and track cognitive patterns according to the scale's internal consistency, which supports its use in both study and practice.

4.3 Group Comparison

A comparison between athletes with fewer than three years of training and those with three or more years was done in order to look at developmental sensitivity. Execution Doubt and Competitive Pressure ratings showed statistically significant differences, according to independent samples t-tests. Execution Doubt was substantially lower among athletes with ≥3 years of training ($M = 2.4$) than among those with <3 years ($M = 3.8$), $t(118) = 4.62$, $p < 0.01$. Comparably, the experienced group's Competitive Pressure scores ($M = 3.1$) were lower than the novice group's ($M = 4.0$); $t(118) = 3.87$, $p < 0.01$. Experienced athletes had higher Technical Self-Talk ratings ($M = 3.9$) than novices ($M = 3.2$), indicating that athletes integrate more phase-specific and constructive messages as training increases. Scores for Somatic Focus stayed largely constant between groups, suggesting that coaching emphasis or individual sensitivity may have a greater impact on body awareness than training duration.

Table 3. Mean Scores by Training Experience

Factor	<3 Years (Mean)	≥3 Years (Mean)
Execution Doubt	3.8	2.4
Technical Self-Talk	3.2	3.9
Somatic Focus	3.5	3.6
Competitive Pressure	4.0	3.1

These findings suggest that while seasoned athletes engage in technical self-talk more frequently, they also exhibit lower levels of evaluative anxiety and cognitive interference. This supports the RATS-SL's developmental sensitivity and demonstrates that exposure to training results in cognitive maturity.

4.4 Domain Interrelationships

The cognitive areas discovered in the Relative Automatic Thoughts Scale for Snatch Lift (RATS-SL) showed significant and theoretically consistent correlations with one another, according to correlation analysis. Notably, there was a strong positive association ($r = 0.62$) between execution doubt and competitive pressure, suggesting that athletes who felt more uncertain upon starting a lift also tended to report higher levels of anxiety linked to their performance. This association points to a common underlying concept that appears in both internal and external self-evaluation contexts and is probably based in anticipatory stress and failure-related fear. In real life, young lifters

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who have concerns about their technical performance may also feel more pressure to perform, particularly in competitive settings where results are exposed to the public.

A moderate correlation (r = 0.48) was found between technical self-talk and somatic focus, suggesting a distinct cognitive pattern that integrates internal cueing with proprioceptive awareness. This study found that athletes who consciously use phase-specific self-instruction (e.g., "drive through the heels" or "stay tight in the catch") are also more aware of their bodies' cues and feedback during lifts. The literature on motor learning emphasizes the value of kinesthetic input and attentional focus in skill acquisition, and this type of integration is consistent with that literature. Despite their similarities, these domains continue to contribute in unique ways to the Olympic lifting cognitive environment, as indicated by the modest strength of the association.

All of these links demonstrate the complexity of cognitive processes involved in Olympic weightlifting. Instead of operating alone, cognitive domains actively interact across psychological states and biomechanical processes. The discovered correlations empirically support the structural validity of the RATS-SL, confirming that the test's domain architecture captures both performance-enhancing and anxiety-driven cognitive patterns. This in-depth knowledge of cognitive interplay offers valuable information to coaches and sport psychologists who want to optimize mental strategies in young lifters, particularly in high-stakes or evaluation scenarios.

5. Discussion

The findings of this study affirm the Relative Automatic Thoughts Scale for Snatch Lift (RATS-SL) as a psychometrically sound and context-sensitive instrument for assessing cognitive micro-patterns in youth Olympic lifters. The emergence of four distinct domains Execution Doubt, Technical Self-Talk, Somatic Focus, and Competitive Pressure reflects the layered psychological demands embedded in snatch lift execution. These domains align with cognitive-behavioral theory and offer a nuanced understanding of how moment-specific thoughts influence motor performance. Athletes with greater training experience exhibited lower scores in Execution Doubt and Competitive Pressure, suggesting developmental sensitivity and reinforcing the scale's discriminative power. The high internal consistency across domains (α = 0.81–0.86) and strong model fit indices from confirmatory factor analysis (CFI = 0.94, RMSEA = 0.048) affirm the structural integrity of the instrument. These results extend prior research on attentional control, self-regulation, and embodied cognition in sport, while introducing a phase-specific framework tailored to Olympic lifting a domain often overlooked in cognitive profiling.

In practice, coaches, sport psychologists, and educators can use the RATS-SL as a diagnostic tool to pinpoint cognitive limitations and create focused mental training programs. Athletes with high Execution Doubt scores, for example, can profit from phase-specific rehearsal, cue-based visualization, and confidence-building techniques, whereas athletes with highly Competitive Pressure might need emotional control and mindfulness-based methods. The scale creates new opportunities for performance optimization, psychological monitoring during training cycles, and tailored coaching by mapping cognition to biomechanical phases. Additionally, by bridging the gap between general mental health assessments and sport-specific cognitive diagnoses, the instrument adds to the body of knowledge in sport psychology. The scale provides a basis for cross-cultural validation, longitudinal tracking, and application to other technical sports like gymnastics, diving, or javelin, despite the sample's geographic restriction to Tamil Nadu. To further understand the mind-body interface in top youth athletics, future studies might examine gender-based disparities, the effects of coaching styles, and integration with physiological markers like heart rate variability or cortisol levels. In the end, the RATS-SL offers both theoretical understanding and usefulness for athlete development, marking a breakthrough in coordinating psychological evaluation with the needs of high-performance movement in real time.

6. Conclusion

This study successfully developed and validated the Relative Automatic Thoughts Scale for Snatch Lift (RATS-SL), a novel instrument designed to capture the cognitive micro-patterns experienced by youth athletes during snatch lift execution. Through rigorous item generation, factor analysis, and reliability testing, the scale demonstrated strong internal consistency and construct validity across four key domains. By bridging cognitive theory with biomechanical execution, RATS-SL offers a practical tool for coaches, psychologists, and researchers working with youth lifters in structured training environments. Its phase-specific design and developmental sensitivity make it particularly suited for use in specialized sports schools, where psychological profiling can inform targeted interventions and

performance optimization. Future research should examine the scale's predictive validity, responsiveness to psychological training programs, and applicability across diverse lifting populations and cultural contexts, thereby deepening our understanding of the cognitive landscape in Olympic lifting and advancing both theory and practice in youth athlete development.

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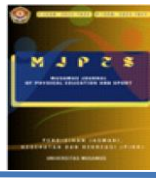

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