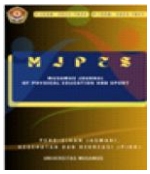
Musamus Journal of Physical Education and Sport (MJPES)
http://ejournal.unmus.ac.id/index.php/physical
Volume 8, No. 4, October 2026 , Pg. 1376-1388
DOI: 10.35724/mjpes.v8i4.8010



Preparation Of A Scale Of Relative Automatic Thoughts For The Snatch Lift For Young Quadrupeds 18-20 Years Old In Specialized Schools

Omar kamil Abed[1*], Ali Ismael Obaid[2]
[1]University of Baghdad, Iraq
[2]Ministry of Higher Education and Scientific Affairs, Iraq
Email: [1]Omar.k@uobaghdad.edu.iq, [2]alialkhafajee@mohesr.edu.iq
Coreesponding author; Omar kamil Abed, email: Omar.k@uobaghdad.edu.iq

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.

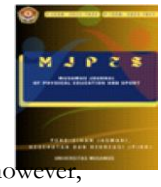
Keywords: Olympic weightlifting, snatch lift, automatic thoughts, sport psychology, youth athletes, cognitive interference, technical self-talk, somatic focus, competitive pressure, psychometric scale, performance prediction

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

Musamus Journal of Physical Education and Sport (MJPES)
http://ejournal.unmus.ac.id/index.php/physical
Volume 8, No. 4, October 2026 , Pg. 1376-1388
DOI: 10.35724/mjpes.v8i4.8010



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

To create a sport-specific psychometric scale to determine which automatic thoughts are associated with snatch lifting movements while performing these movements in youth Olympic weightlifters (18-20 years old).

To examine and confirm different cognitive domain variables (Cognitive factors) namely: Execution Doubt, Technical Self-Talk, Somatic Focus and Competitive Pressure as assessed from the RATS-SL.

• 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 assess developmental sensitivity, comparing the athlete's cognitive profile with other groups of athletes with varying developmental life experience and levels of competition exposure.

Musamus Journal of Physical Education and Sport (MJPES)
http://ejournal.unmus.ac.id/index.php/physical
Volume 8, No. 4, October 2026 , Pg. 1376-1388
DOI: 10.35724/mjpes.v8i4.8010



To provide coaches, sport psychologists and educators with a practical tool to aid them in implementing specific mental training programmes, depending on the cognitive patterns in the various training phases.

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.

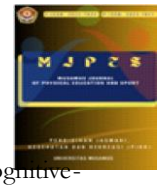
Brisimis et al. [12] investigated how autonomy-supportive climates, psychological need satisfaction, and need thwarting relate to students' self-talk in physical education settings using validated questionnaires assessed across a school-based sample. The studied was proposed to investigate how motivational 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-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.

Musamus Journal of Physical Education and Sport (MJPES)
http://ejournal.unmus.ac.id/index.php/physical
Volume 8, No. 4, October 2026 , Pg. 1376-1388
DOI: 10.35724/mjpes.v8i4.8010



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

This study has used descriptive-correllation design was developed and validated a sport-specific psychological scale to measure automatic thoughts in the various phases of the snatch's lift performance in young Olympic weightlifters. The descriptive element allowed cognitive reactions to be systematically recorded when performing the various parts of the lift (first pull, transition, catch and recovery) of the biomechanics. Changes in these thought patterns, however, were examined as a function of competition, training, and performance outcomes through correlational analysis. In past studies on sport psychology, either self-talk or general anxiety measures were employed, not specific to the action studied, or with the sensitivity of the phases of the action studied, e.g., snatch. Besides, many previous studies have adopted a cross-sectional study with no regard to the technical level segmentation or maturity. The limitations mentioned above are overcome by this study, which used a descriptive-correlational approach to the study of the relationship between cognitive domains and the development of athletes, and by collecting authentic and ecologically valid cognitive assessments in a sports training context. The described

Musamus Journal of Physical Education and Sport (MJPES)
http://ejournal.unmus.ac.id/index.php/physical
Volume 8, No. 4, October 2026 , Pg. 1376-1388
DOI: 10.35724/mjpes.v8i4.8010

methodology will help identify the relationships between execution doubt, technical self-talk, somatic focus and competitive pressure during the snatch lift, which in turn could provide valuable information for psychological profiling and customized psychological training during a special youth sport context.

3.1 Participants

A total of 120 young athletes (age 18-20 years) were selected from three specialist sports institutions in Tamil Nadu, India. The schools were selected as those that have established Olympic Weight Lifting programs and regularly represented their school at the district and state level. All of the competitors had been officially trained for two years or more in Olympic lifting, and had been taught to do the snatch lift primarily. 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. To ensure gender representation and diversity in training experiences, both men and women were included. Informed consent was obtained from all participants and all guardians and an IRB ethical approval was obtained.

3.2 Item Generation

The first item pool for the Relative Automatic Thoughts Scale for Snatch Lift (RATS-SL) was developed through a multi-phase procedure that employed sport-specific biomechanics and a cognitive-behavioral theory. Forty-two pieces were produced to represent the automatic ideas that were explored at various stages of the snatch lift performance. In the first step of the process, an extensive literature review of sport psychology measures was undertaken including the Automatic Self-Talk Questionnaire for Sports, and the Automatic Thoughts List for Sport. These tools provided basic knowledge of the components and intensity of the cognitive reactions in competition.

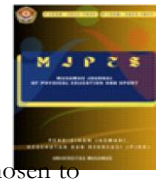
To ensure the sport specificity, biomechanical analyses of the snatch lift were undertaken, consisting of four phases: first pull, transition, catch and recovery. Each phase was associated with possible athlete internal responses based on athlete and coach feedback. The twelve experienced young lifters and six national level coaches were interviewed in a semi-structured manner to establish common thought patterns across practice and performance. Some of them were, "I'll miss the catch," "Keep the bar close," "My grip feels wrong," and "Everyone is watching me. Athlete-friendly, simple wording was used to create items which were examined for clarity, applicability and cultural fit.



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

3.3 Scale Format

Musamus Journal of Physical Education and Sport (MJPES)
http://ejournal.unmus.ac.id/index.php/physical
Volume 8, No. 4, October 2026 , Pg. 1376-1388
DOI: 10.35724/mjpes.v8i4.8010



The RATS-SL is a self-report survey on a 5-point Likert scale (1 = Never; 5 = Always). This format was chosen to capture the number of automatic thoughts during the performance of snatch lifts. The first 42 were clustered by hypothesis, based on expert opinion and theory, into five domains.

- Execution Doubt: Thoughts of fear or worry over a technical error or failure on lift-off.

Technical Self-Talk: Remedial internal dialogue and teaching cues are used during lift phases.

- Somatic Focus: Proprioceptive feedback, muscle tension and awareness of body sensations.

Competitive Pressure: Thoughts on out-of-the-house assessment, audience presence, performance anxiety.

Self-Efficacy: Belief that it is possible to execute and affirmations with confidence.

We expected each domain to represent a kind of mental construct with respect to Olympic lifting. Athletes were asked whether they had any thoughts during the snatch to consider and during competition this was in a discreet supervised environment and the scale was administered.

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

The original item pool was initially reviewed by a panel of experts consisting of two biomechanists, three Olympic weight lifting coaches and three sport psychologists. Relevance, clarity, and conformity to the cognitive demands of snatch lift performance were assessed for each item. Six of the items were reworded to clarify what was being asked due to comments and two were removed due to redundancy.

Content was validated by a group of Olympic lifting coaches, sport psychologists and biomechanical researchers. For each item, there was an assessment of relevance, clarity and phase related alignment. The following formula was used to determine the Content Validity Index (CVI):

CVI = Number of experts rating item as relevant / Total number of experts.

Items with a CVI less than 0.80 were either eliminated or changed. Overall content validity (CVI) was 0.89, indicating good content validity.

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.

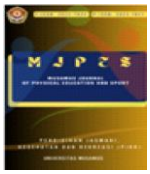
Phase 3: Exploratory Factor Analysis (EFA)

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.

Musamus Journal of Physical Education and Sport (MJPES)
http://ejournal.unmus.ac.id/index.php/physical
Volume 8, No. 4, October 2026 , Pg. 1376-1388
DOI: 10.35724/mjpes.v8i4.8010



- 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

The internal consistency of each of the subscores was evaluated using Cronbach's alpha. The overall scale and subscale scores of α = 0.87 and 0.78–0.84 respectively provided strong reliability. The Cronbach's alpha is computed as follows:

$$\alpha=(N\cdot c)/(v+(N-1)\cdot c)$$

Average variance of items within the test, Average covariance of items, Number of items in the test. Cronbach's alpha for the overall scale was 0.87, which is higher than the recommended value of 0.70, and alpha values for the subscales ranged from 0.78 to 0.84. Construct validity was explored by correlating RATS-SL scores with competition and training. Athletes with over three years of training showed greater Technical Self-Talk scores and significantly 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. EFA and CFA were used to explore and validate the factor structure. Independent samples t-test were used to compare the cognitive responses between the training experience groups (less than 3 years of training experience and more than 3 years of training experience). Pearson's correlation coefficients were computed to check the interrelationships of the cognitive domains. A p value of < 0.05 was used throughout the analysis, and all 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. Those items that had moderate cross-loadings and factor loadings ≥ 0.50 were retained. Consistency of the four elements which appeared with the athlete-reported cognitive processes in the snatch lift performance and the theoretical expectations:

With respect to Execution Doubt: This component had negative sentiments expected throughout the lift start-up period. The dimension was strongly related to phrases like “I'm not strong enough” or “I'll fail the lift”, which indicate a concern of the technical aspect of the lift or anxiety about performance.

Technical Self-Talk: Self-talk that was instructive and remedial was included in this category, for example, "Lock elbows fast" and "Keep the bar close.

Somatic Focus: Items such as: "My shoulders feel tight" and "My grip feels unstable" were more conscious of physical sensations. These ideas also tended to be associated with muscle stress and proprioceptive sensation on the lift phase.

Competitive Pressure: This included concepts that were social comparison and external evaluation, for example 'everyone is looking at me' and 'I don't need to let them down. The items were most obvious in competitive situations and related to the concepts of performance anxiety and evaluative threat.

Confirmatory Factor Analysis (CFA) was conducted to confirm the factor structure and the outcome yielded a good model fit for the final scale (CFI = 0.94, TLI = 0.91, RMSEA = 0.06) with acceptable fit indices. The items and

Musamus Journal of Physical Education and Sport (MJPES)
http://ejournal.unmus.ac.id/index.php/physical
Volume 8, No. 4, October 2026 , Pg. 1376-1388
DOI: 10.35724/mjpes.v8i4.8010

their factor loadings are displayed in Table 1, as well as the cognitive domains they were assigned to. There were quite high loadings on each of the elements retained to give structure to the scale.

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
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.

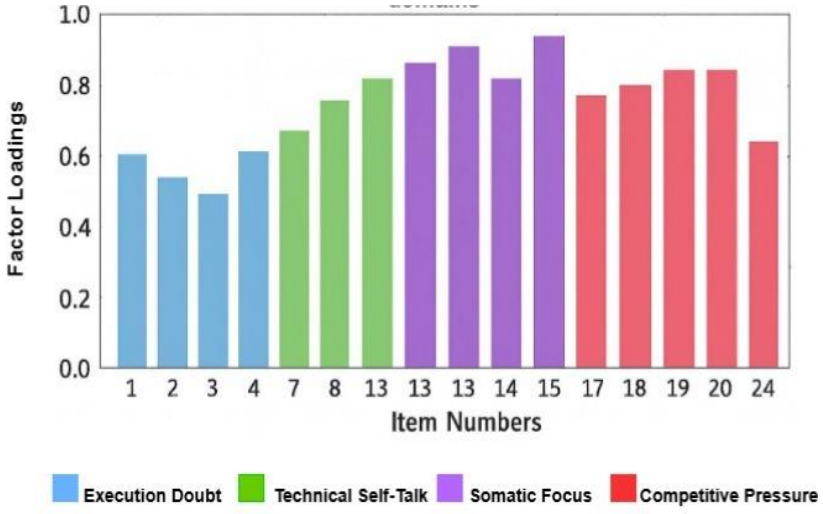
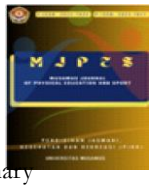


Fig 2: Factor loadings of retained items across four cognitive domains

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

Musamus Journal of Physical Education and Sport (MJPES)
http://ejournal.unmus.ac.id/index.php/physical
Volume 8, No. 4, October 2026 , Pg. 1376-1388
DOI: 10.35724/mjpes.v8i4.8010



Reliability analysis was used to assess the internal consistency of RATS-SL, with Cronbach's alpha as the primary measure of internal consistency. Cronbach's alpha values for psychological instruments are generally considered appropriate to be above 0.70, with high internal consistency indicating greater similarity between items on a subscale. As for the overall scale, the RATS-SL has a high level of reliability, with an alpha coefficient of 0.87 for the study's sample of young Olympic lifters.

The subscales demonstrated good internal consistency with alpha values between 0.78 and 0.84. The items in the Execution Doubt subscale had an alpha of 0.81, which means that the items form a coherent set to measure hesitation and anticipatory anxiety during the first part of the lift. This reliability rate implies that athletes' responses to execution-related problems are predictable and easily understood. The highest alpha value (0.84) was obtained for the items assessing internal cueing, suggesting that items related to internal cueing (reminders, biomechanical instructions for the different phases of the movement) are very consistent and they are one cognitive domain. This is especially crucial for comprehending athletes' self-directed language strategies for mental organization of lifts.

In addition, Somatic Focus had a good reliability (alpha = 0.78). This domain is reflective of how athletes interpret other physical sensations like proprioceptive cues, bar path feedback and muscle tension. Despite this, the score is satisfactory for the internal consistency of the items measuring kinesthetic attention, but is slightly lower than that of other subscales. The alpha value for the Competitive Pressure variable (which reflects the ideas surrounding the presence of the audience, the expectations of a performance 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 important to note that though the Self-Efficacy subscale was eventually removed from the final factor structure during EFA, it had a good alpha of 0.83 initially. This suggests that the perceived skill and confidence items were internally consistent regardless of whether they were in 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.

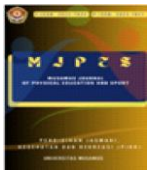
4.3 Group Comparison

In order to investigate developmental sensitivity, a comparison was made between athletes who had less than 3 years of training and those who had 3 or more years of training. Independent samples t-tests were used to determine the differences in ratings between groups on the Execution Doubt and Competitive Pressure ratings. Execution Doubt was substantially lower among athletes with ≥3 years of training (M = 2.4) than among those with <3 years (M = 3.8), $t(118) = 4.62$, $p < 0.01$. Similarly, the CPs of the experienced group (M = 3.1) differed from those of the novice group (M = 4.0) with $t(118) = 3.87$ $p < 0.01$. The ratings for Technical Self-Talk (M = 3.9) for experienced athletes were higher than for novices (M = 3.2), suggesting athletes can include more phase-specific and positive messages as training levels go up. Regarding Somatic Focus, coaches' emphasis and/or individual sensitivity had a more significant effect on body awareness than training duration as scores did not vary greatly between groups.

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

Musamus Journal of Physical Education and Sport (MJPES)
http://ejournal.unmus.ac.id/index.php/physical
Volume 8, No. 4, October 2026 , Pg. 1376-1388
DOI: 10.35724/mjpes.v8i4.8010



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. Interestingly, execution doubt positively correlated with competitive pressure ($r = 0.62$), indicating that when athletes were more uncertain when initiating a lift, they were also more likely to experience higher levels of performance anxiety. This association refers to a similar general idea that is used in internal and external self-evaluation situations, and likely originates from the fear of failure and stress of anticipation. In reality, many young lifters who are concerned about their technical skills may also be under pressure to perform, especially if they're competing and their performance is visible to an audience.

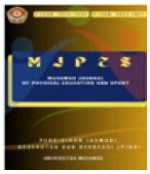
There was a moderate correlation ($r = 0.48$) between technical self-talk and somatic focus, indicating a unique cognitive pattern that combines internal cueing with proprioceptive awareness. In this study it was also found that athletes who knowingly utilize Phase-Specific Self-instruction (e.g., "Drive through the heels" or "Stay tight in the catch") are also more conscious of their body's cues and feedback when lifting. The literature on motor learning has stressed the importance of kinesthesis and the focus of attention in learning skills, and this mode of integration is consistent with this literature. Even though there are similarities between these domains, they still play unique roles in the Olympic lifting cognitive environment, evidenced by the moderate association between them.

These links all show the complexity of the cognitive processes used in weight lifting in the Olympics. Psychological states and biomechanical processes interact among cognitive domains, rather than functioning independently. The correlations found confirms the RATS-SL's structural validity: the domain structure is empirically supported by the test's performance enhancing and anxiety-based cognitive patterns. Such understanding of cognitive interplay is valuable information for coaches and sport psychologists who wish to enhance mental strategies in young lifters, especially in an evaluation and/or high stress environment.**5. Discussion**

The findings from this study support the psychometric properties and ecological context of the Relative Automatic Thoughts Scale for Snatch Lift (RATS-SL) as an instrument for measuring cognitive micro-patterns of youth Olympic lifters. With four domains of Execution Doubt, Technical Self-Talk, Somatic Focus and Competitive Pressure, the picture of the psychological demands that are layered in the execution of the snatch lift becomes clearer. These domains are in line with cognitive-behavioral theory and offer a finer-grained view of the influence of thoughts at a particular moment on motor performance. Results in the domains of Execution Doubt and Competitive Pressure were higher for athletes with less years of training, suggesting developmental sensitivity and discriminative properties of this scale. The internal consistency of the domains of the instrument was high ($\alpha = 0.81–0.86$), and confirmatory factor analysis with CFI = 0.94 and RMSEA = 0.048 showed the structural integrity of the instrument. The findings are in line with previous studies on attentional control, self-regulation and embodied cognition in sport and provide a new phase-specific framework for Olympic lifting – an area that was largely neglected in cognitive profiling studies.

Coaches, sport psychologists or educators can practically apply the RATS-SL to pinpoint cognitive weaknesses, and create mental training programmes. At higher Execution Doubt scores, rehearsals in the phase, cue visualization, and confidence building exercises could be helpful, and for athletes with higher Competitive Pressure scores emotional control and mindfulness techniques might help. The scale is designed to provide new opportunities to optimize the performance, to monitor cognition during the training cycles and to provide customized coaching, based on the mapping of cognition to biomechanical phases. Furthermore, general mental health assessment is correlated with sport specific cognitive assessment in the tool, which adds to sport psychology knowledge base. The sample was limited to Tamil Nadu but the scale can be cross culturally validated and longitudinally followed, and used in other technical sports like gymnastics, diving or javelin. Gender differences and the impact of coaching methods and the use of monitoring measures like heart rate variability or cortisol levels in elite youth athletes could be the subject of future research to better understand the mind-body connection. Finally, the RATS-SL gives theory and application for athlete development, and is a major step forward in the simultaneous orchestration of psychological assessment and the demand of high performance movement in real-time.

Musamus Journal of Physical Education and Sport (MJPES)
http://ejournal.unmus.ac.id/index.php/physical
Volume 8, No. 4, October 2026 , Pg. 1376-1388
DOI: 10.35724/mjpes.v8i4.8010

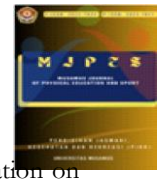


6. Conclusion

The study was successful in developing and piloting a novel-scale to measure cognitive micro-patterns related to the snatch lift in youth athletes, the Relative Automatic Thoughts Scale for Snatch Lift (RATS-SL). The scale had high level of internal consistency and construct validity in four major areas using item generation, factor analysis and reliability testing. RATS-SL is a pragmatic tool for coaches, psychologists and researchers of young lifters for use in a structured training environment, in which they can combine the cognitive theory with the biomechanics of execution. It is specifically developed for each phase of the development and can also be used in specialized sports schools, where psychological profiling can be used for targeted intervention and optimization of performance. There is a need for further research to investigate the predictive validity of the scale, its sensitivity to psychological training programs, as well as its application in the context of different lifting populations and cultures to gain deeper insight into the cognitive ecology of the Olympic lifting movement and to help develop theory and practice of youth athlete development.

7. References

1. Anderson, T., Adams, W. M., Bartley, J. D., Brutus, A. L., Donaldson, A. T., & Finnoff, J. T. (2023). Analysis of the sport mental health assessment tool 1 (SMHAT-1) in team USA athletes. *British Journal of Sports Medicine*, *57*(18), 1187-1194.
2. Samadi, H., Ayatizadeh, F., Axt, G., & Machado, S. (2021). Comparison between mindfulness and cognitive-behavioral psychological interventions on the reduction of pre-competitive stress of elite shooters: a follow-up of 2 months. *Cuadernos de Psicología del Deporte*, *21*(1), 192-203.
3. Michel-Kröhler, A., Krys, S., & Berti, S. (2023). Development and preliminary validation of the sports competition rumination scale (SCRS). *Journal of Applied Sport Psychology*, *35*(2), 265-283.
4. Urfa, O., & Aşçı, F. H. (2023). The direct and indirect effects of irrational beliefs on perceived performance: The mediation role of emotions and automatic thoughts. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, *41*(2), 432-453.
5. Shannon, S., Shevlin, M., Brick, N., Donnelly, P., Horgan, P., & Breslin, G. (2025). Psychometric analysis of the International Olympic Committee's Sport Mental Health Assessment Triage Tool among non-elite amateur adult athletes. *International Journal of Sport and Exercise Psychology*, *23*(4), 553-574.
6. Daley, M. M., & Reardon, C. L. (2024). Mental health in the youth athlete. *Clinics in sports medicine*, *43*(1), 107-126.
7. do Nascimento, I. B., Pereira, K. R., de Bulhões Gomes, F. M. M., Fleig, R., & Roesler, H. (2022). Strategies used in the Olympic weightlifting and psychological aspects: factors that contemplate sports performance. *Scientia Plena*, *18*(4).
8. Anderson, D. N. J., Gottwald, V. M., & Lawrence, G. P. (2022). Capturing the holistic profile of high performance Olympic weightlifting development. *Frontiers in Sports and Active Living*, *4*, 986134.
9. Russell, S., Johnston, R. D., Stanimirovic, R., & Halson, S. L. (2024). Global practitioner assessment and management of mental fatigue and mental recovery in high-performance sport: A need for evidence-based best-practice guidelines. *Scandinavian Journal of Medicine & Science in Sports*, *34*(1), e14491.
10. Ovchinnikova, N. A., Medvedeva, E. V., Yezhova, G. S., Krivoshchekov, S. G., & Kapilevich, L. V. (2023). Influence of physical loads on cognitive functions and bioelectric activity of the brain in athletes of various specializations. *Human Physiology*, *49*(5), 502-512.
11. Aikawa, S., & Takai, H. (2021). Relationship between imagery ability, performance, and variables related to performance. *The Sport Psychologist*, *35*(2), 123-130.
12. Brisimis, E., Krommidas, C., Galanis, E., Karamitrou, A., Syrmpas, I., & Comoutos, N. (2020). Exploring the relationships of autonomy-supportive climate, psychological need satisfaction and thwarting with students' self-talk in physical education. *J Educ Soc Behav Sci*, *33*(11), 112-22.
13. Nixdorf, I., Nixdorf, R., Beckmann, J., Martin, S. B., & MacIntyre, T. E. (Eds.). (2023). *Routledge handbook of mental health in elite sport*. Routledge.
14. Zahran, K. M., Hassan, A., & Hammad, B. E. (2025). Biomechanical characteristics of snatch lift for Egyptian women weightlifters in 81 kg category. *Journal of Physical Education and Sport*, *25*(1), 136-147.
15. Chen, T., Chen, T., Yu, H., Xian, Y., & Sun, T. (2025). The Mediating Role of Psychological Resilience between Parenting Styles and Athletic Performance in Adolescent Athletes: A Serial Multiple Mediation Model. *Frontiers in Psychology*, *16*, 1661771.



16. Guo, C., Chen, F., & Wang, Y. (2025). The Psychological Impact of Competitive Sports Participation on Adolescent Athletes: An Analysis of Coping Mechanisms and Performance Outcomes. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, *43*(2), 24.
17. Berengüí, R., Castejón Martínez, M. Á., Parra Plaza, F. J., & López Gullón, J. M. (2024). Burnout and psychological performance: relationships in youth athletes. *Journal of Sport and Health Research*, *16*(2).
18. Rice, S. M., Parker, A. G., Mawren, D., Clifton, P., Harcourt, P., Lloyd, M., ... & Purcell, R. (2020). Preliminary psychometric validation of a brief screening tool for athlete mental health among male elite athletes: the athlete psychological strain questionnaire. *International journal of sport and exercise psychology*, *18*(6), 850-865.