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# Training age as precursor of emotion regulation, achievement goal and anxiety

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**Abstract**
There is a lack of studies on training age and the effect of training age on psychological characteristics no study indicates the difference between training age on emotion regulation and achievement goal and anxiety in sports. In this study, we examined the difference between different training ages on emotional regulation, achievement goals and Sports performance Anxiety, as well as emotion regulation, achievement goal and anxiety as a predictor of Training age. To collect data for this research, the "Emotion Regulation Questionnaire (ERQ; Gross & John, 2003)", "Achievement Goal: Elliot and McGregor's (2001)" and "Sport Performance Anxiety SAS-2 were used together with a personal information form. Cronbach Alpha, Confirmatory factor analysis, One-way ANOVA, and leaner regression analysis were computed. The data were obtained from a total of 201 (97 male and 104 female) Indian interuniversity-level judo players divided into 3 training age groups 1-5,6-10 and 11-15 year training groups. The validity and reliability of the data were constructed. Mastery avoidance, Performance Approach, and Performance avoidance show significant differences in training age groups. 11-15 years training age group shows higher Achievement goal as well as higher sports performance anxiety. 6-10 year training age groups show higher emotion regulation. Performance avoidance only positively predicts training age.

**Keywords:** Training age, expressive suppression, cognitive reappraisal, emotion regulation, achievement goal, sports performance anxiety

## Introduction
Ideas of emotions since ancient Greece. Emotion and other psychological factors have a major role in sports performance. It's even been established that for athletes to perform as intended in the arena, they need to be in their optimum emotional state. Emotion management is a way for humans to get to their optimum emotional range. Emotional intelligence thus becomes a critical competency for all athletes. According to Aldao *et al*. (2010) [1], there are two types of emotion regulation strategies: Maladaptive, which is linked to negative long-term consequences, and adaptive, which is linked to beneficial long-term results. "Allowing one's emotions to proceed without resisting them in any way" (Werner and Gross 2010) [30] is a good approach for summing up accepting one's emotions. The idea that accepting one's inner experiences is an adaptive strategy for managing emotions is supported by empirical evidence (Hayes and Lillis 2014; Werner and Gross 2010) [15, 30]. Werner and Gross (2010) [30] also note that dysfunctional reactions-like making judgments or suppressing unpleasant feelings-may be less common when emotions are embraced. Using one of these two techniques, cognitive reappraisal, to regulate emotions involves changing one's perspective on the current situation (Gross & John, 2003) [13]. To go further, the athlete might attempt to view an upcoming competition as an exciting opportunity rather than a stressful circumstance. Avoiding expressing emotions is known as the alternative method, suppression (Gross & John, 2003) [13].
Individuals differ in the ways that they pursue their goals and behave in different ways. When faced with an accomplishment circumstance, some people work hard to attain clear goals or highly desired outcomes, while others have no such expectations or aspirations (Harackiewicz & Sansone, 1991) [14]. Furthermore, research has shown that the following factors can influence an individual's achievement goal: age, self-efficacy, and perception of their social environment (Anderman & Anderman, 1999; Bong, 2009; Phillips & Gully,

1997) [3, 5, 23]. The motivation behind achieving objectives is known as achievement motivation, and it is defined as the aim or the cognitive-dynamic focus of competence-based behaviour (Maehr, 1989; Elliott, 1997) [20, 10]. Within the context of sports, the discussion of achievement objectives has mostly revolved around the dichotomous differentiation between mastery and performance goals (Duda & Nicholls, 1992; Roberts, Treasure, & Balague, 1998) [9, 24]. Four different achievement goals make up the 2 X 2 framework: Performance approach (PAp), mastery avoidance (MAv), mastery approach (MAp), and performance avoidance (PAv). MAp objectives are the pursuit of exceeding one's own level of competence, such as mastery of a particular task. In other words, MAv objectives are the attempt to avoid intrapersonal or total incompetence; for example, they are the attempt to not perform worse than the preceding performance. PAp objectives represent attempting to get closer to normative competence, such as aiming for superior performance. The PAv aims are an attempt to prevent normative incompetence, i.e., an attempt to prevent doing worse than others.

Anxiety is defined as a fearful condition that might cause defensive and avoidance behaviours. It may also be defined as a certain emotion that is necessary for making preparations to flee from a situation that is thought to be dangerous or frightening. Many people view anxiety as a complicated psychological condition, and it's likely one of the hardest feelings to categorize and identify (Cheng WK, Hardy L, & Markland D, (2009) [6]. Anxiety is a subjective sensation associated with the activation of the autonomic nervous system, characterized by anxiety, tension, and concern. Anxiety has the potential to seriously harm people (Saleem S, Khan IA, & Saleem T, 2019) [25]. Participation in sports "A tendency to perceive competitive situations as threatening and to respond to these situations with feelings of apprehension and tension" is the definition of competitive anxiety (Varley CK, & Smith CJ 2003) [29]. Sports participation stress is linked to anxiety symptoms. An imbalance between the athlete's perceived capacity to respond and the demands of their environment leads to stress. Anxiety is the person's nervous expectation or worry of a potentially harmful event in the future. Connolly SD, *et al*. (2007) [7] Anxiety is typically accompanied by unpleasant emotions, tension or stress, as well as physical symptoms and indicators. Training age is the total amount of time spent in sport-related activities and training programs that promote the development of fundamental movement patterns, musculoskeletal health, and overall physical fitness (Myer GD, Lloyd RS, Brent JL, & Faigenbaum AD, 2013) [21]. The total number of years that an athlete has specialized in a single sport is known as their "sport-specific training age" (Balyi I, Way R, Higgs C, (2013) [4]. A theoretical concept related to training age can help practitioners choose suitable exercise criteria. Even if a child's training age is crucial, their cognitive development may play a major role in determining whether or not they can execute basic and complicated movement patterns with confidence, enthusiasm, and energy. Perhaps a child's connections between their cognitive, perceptual, and motor skills are what allow them to carry out complex movements (Myer GD, *et al*.) [22]. The association between psychological characteristics and training age has not been thoroughly studied. Training age may impact athletes' psychological functioning, particularly emotion regulation, sports performance anxiety and Achievement goals. In the meanwhile, the researcher decided to check the psychological factors and training age chosen for this study.

## Methodology

**Objectives of the study:** The main objectives of the study are to find out the reliability and construct validity of the Emotion regulation questionnaire, achievement goal questionnaire and Sports performance anxiety scale. To compare training age plays a role in emotion regulation, achievement goal and sports performance anxiety to establish emotion regulation, achievement goal and sports anxiety as a predictor of Training age.

**Participants:** The sample comprised 201 (90 Players in Training age 1-5 years (42 male and 48 female), 83 Players in Training age 6-10 (38 male and 45 female) years and 28 Players in Training age 11-15 years (17 male and 11 female) All India inter-university Judo championship participants in the year 2022-23 held at a Lovely Professional University in Punjab, India. Age between 17 and 25.

**Measures:** The Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) [13] is an established 10-item self-report test that focuses on emotion-regulation techniques along with emotion-management methods. People are asked to score how much they generally attempt to alter their thoughts or actions in order to alter their feelings. The questionnaire measures two distinct emotion regulation techniques, expressive suppression (ES) and cognitive reappraisal (CR), on a seven-point Likert scale (1 meaning "Strongly disagree", 4 meaning "Neutral", and 7 meaning "Strongly agree"). A subscale's mean score that is higher suggests that the technique is more widely accepted.

The Achievement Goal Questionnaire for Sport (AGQ-S; Conroy *et al*., 2003) [8] was created to evaluate how much players supported certain performance objectives in the sport of their choice. Four goals, each with three items, are measured by the AGQ-S: mastery approach (MAp), mastery avoidance (MAv), performance approach (PAp), and performance avoidance (PAv) on a Likert scale of seven points, which goes from 1 (not at all like me) to 7 (completely like me).

Sport Performance Anxiety SAS-2 (Smith *et al*., 2006) [26] was employed to check the anxiety of the subject. The 15-item SAS-2 is divided into three subscales: Somatic anxiety (SA), worry (W), and disruption of concentration (CD). Participants use a 4-point Likert scale to indicate their normal feelings, which range from not at all (1) to very much (4).

**Statistical Analysis:** SPSS 26.0 software was used for data analysis in this study to check the reliability of each scale, person product moment correlation was used to check the relationship between training age and selected psychological variables. ANOVA was used to check the comparison training age plays a role and linear regression was used to find out how training age predicts emotional regulation, achievement goal and sports performance anxiety. AMOS 23 was used to determine the construct validity of emotion regulation, achievement goal and sports performance anxiety.

## Results

**Reliability Analysis:** The researcher first employed the three scales, and the results are shown in Table 1

**Table 1:** reliability of all variables is selected for the study

| Variable | Sub-variable | Cronbach Alpha value |
|---|---|---|
| Emotion regulation | Cognitive reappraisal | 0.80 |
| | Expressive suppression | 0.73 |
| Achievement Goal | Mastery Approach | 0.65 |
| | Mastery Avoidance | 0.69 |
| | Performance approach | 0.71 |
| | Performance avoidance | 0.70 |
| Sports anxiety | Somatic anxiety | 0.68 |
| | Worry | 0.73 |
| | Concentric disruption | 0.77 |

Table 1 Cronbach alpha reliability coefficient result shows that each of the sub-variables score above 0.65. It shows that the reliability is acceptable and above 70 is good.

**Confirmatory Factor analysis (CFA):** Using AMOS 23 Performed Confirmatory Factor analysis (CFA) of the Emotion regulation Questionnaire (ERQ), Achievement Goal Questionnaire for Sport (AGQ-S) and Sport Performance Anxiety (SAS-2) to determine the validity of the questionnaire was good. The first phase in using confirmatory factor analysis was to select the model the result is shown in Table 2

**Table 2:** Confirmatory Factor Analysis (CFA) results.

| Variable name | $X^2$ | DF | $X^2$/df | GFI | PGFI | IFI | CFI | RMSEA |
|---|---|---|---|---|---|---|---|---|
| Emotion Regulation Questionnaire | 39.309 | 33 | 1.19 | .963 | .578 | .988 | .988 | 0.031 |
| Sports performance anxiety | 116.454 | 87 | 1.339 | .931 | .675 | .928 | .924 | 0.041 |
| Achievement goal | 83.944 | 48 | 1.749 | .937 | .576 | .948 | .946 | 0.061 |

The results are shown in 2 In Confirmatory Factor Analysis, $\chi$ 2/DF, CFI (Comparative fit Index), GFI (goodness-of-fit index), Parsimonious goodness-of-fit index (PGFI), Incremental Fit Index (IFI) and RMSEA (root-mean-square error of approximation) indexes were used as the model indicators. The fitting criteria for each index were determined as follows: $\chi$ 2/DF $\leq$ 3. IFI, GFI and CFI $\geq$ 0.80, and the closer it was to one, the better the validity was. RMSEA $\leq$ 0.10, and the closer it is to zero, the better the validity and Parsimonious goodness-of-fit index (PGFI) $\geq$ 0.50 indicate that good fit.
The validity of the scales was extremely high, and the model fit was excellent, as demonstrated by Table 3 indices of the three scales following the standard.

**Descriptive statistic:** Before calculating Correlation, ANOVA and Regression analysis researcher did descriptive statistics of different levels of training age on gender in emotion regulation, achievement and Sports performance anxiety in the following Tables.

Table 3 shows the descriptive statistics of the different levels of training age in emotion Wregulation, Achievement Goal and Sports Performance Anxiety. The Cognitive reappraisal result shows that all of the age groups have an almost similar mean score of 6-10 years of training age athletes show a slightly higher mean compared to the other 2 groups. As well the table also reveals that the 6-10 training group scored higher levels of cognitive suppression than the other group and the 1-5 year training age group scored very close to the 11-15 year training group. Similarly, The table also revealed that the 11-15 years of Training age group scored higher in the Mastery approach, Mastery Avoidance, Performance approach and Performance Avoidance compared to other groups with a high mean difference. Also, the table discloses that the age group of 11-15 years of training group scored higher in somatic anxiety, worry and concentric disruption. The table shows that there is a high mean somatic anxiety and concentric disruption also in worry most of the training group scored almost similarly.

**Table 3:** Descriptive statistics statistic of training age group in all selected variables

| Variable | Training Age group | Mean | Std. Dev | Std. Error | 95% Confidence Interval for Mean | |
|---|---|---|---|---|---|---|
| | | | | | Lower bond | Upper bond |
| Cognitive reappraisal | 1-5 year | 28.26 | 8.67 | .914 | 26.44 | 30.07 |
| | 6-10 year | 28.55 | 6.57 | .721 | 27.12 | 29.99 |
| | 11-15 year | 28.21 | 7.70 | 1.456 | 25.23 | 31.20 |
| Expressive Suppression | 1-5 year | 17.70 | 5.90 | .622 | 16.46 | 18.94 |
| | 6-10 year | 17.98 | 5.30 | .582 | 16.82 | 19.13 |
| | 11-15 year | 16.04 | 6.98 | 1.320 | 13.33 | 18.74 |
| Mastery Approach | 1-5 year | 14.39 | 4.81 | .507 | 13.38 | 15.40 |
| | 6-10 year | 15.61 | 4.20 | .461 | 14.70 | 16.53 |
| | 11-15 year | 16.14 | 2.46 | .465 | 15.19 | 17.10 |
| Mastery Avoidance | 1-5 year | 13.53 | 4.53 | .477 | 12.59 | 14.48 |
| | 6-10 year | 13.29 | 4.78 | .525 | 12.24 | 14.33 |
| | 11-15 year | 15.86 | 2.03 | .436 | 14.96 | 16.75 |
| Performance Approach | 1-5 year | 13.09 | 4.97 | .524 | 12.05 | 14.13 |
| | 6-10 year | 14.98 | 4.19 | .460 | 14.06 | 15.89 |
| | 11-15 year | 16.04 | 2.25 | .426 | 15.16 | 16.91 |
| Performance Avoidance | 1-5 year | 11.93 | 5.08 | .535 | 10.87 | 13.00 |
| | 6-10 year | 13.04 | 5.14 | .564 | 11.91 | 14.16 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 11-15 year | 16.25 | 2.56 | .484 | 15.26 | 17.24 |
| Somatic Anxiety | 1-5 year | 10.90 | 3.87 | .408 | 10.09 | 11.71 |
| | 6-10 year | 11.30 | 5.36 | .589 | 10.13 | 12.47 |
| | 11-15 year | 13.14 | 2.50 | .473 | 12.17 | 14.11 |
| Worry | 1-5 year | 11.66 | 3.74 | .394 | 10.87 | 12.44 |
| | 6-10 year | 11.54 | 3.11 | .341 | 10.86 | 12.22 |
| | 11-15 year | 11.82 | 2.79 | .527 | 10.74 | 12.90 |
| Concentric Disruption | 1-5 year | 11.42 | 3.85 | .406 | 10.62 | 12.23 |
| | 6-10 year | 11.63 | 3.39 | .372 | 10.89 | 12.37 |
| | 11-15 year | 12.54 | 2.24 | .423 | 11.18 | 12.15 |

**Analysis of variance:** The analysis of variance was used to find out if is there any relationship between different levels of training age. The analysis of variance table is shown in Table 5.

**Table 5:** Analysis of Variance training age on all selected variables

| | | Sum of Square | DF | Mean Square | F | SIG |
|---|---|---|---|---|---|---|
| Cognitive Reappraisal | Between Groups | 4.672 | 2 | 2.336 | .039 | .962 |
| | Within Groups | 11840.343 | 198 | 200 | | |
| | Total | 11845.015 | 200 | | | |
| Expressive Suppression | Between Groups | 81.079 | 2 | 40.540 | 1.195 | .305 |
| | Within Groups | 6717.816 | 198 | 33.928 | | |
| | Total | 6798.896 | | | | |
| Mastery Approach | Between Groups | 97.619 | 2 | 48.810 | 2.633 | .074 |
| | Within Groups | 3670.480 | 198 | 18.538 | | |
| | Total | 3768.100 | 200 | | | |
| Mastery Avoidance | Between Groups | 146.166 | 2 | 73.083 | 3.764 | .025 |
| | Within Groups | 3844.889 | 198 | 19.419 | | |
| | Total | 3991.055 | | | | |
| Performance Approach | Between Groups | 254.193 | 2 | 127.097 | 6.661 | .002 |
| | Within Groups | 3778.205 | 198 | 19.082 | | |
| | Total | 4032.398 | 200 | | | |
| Performance Avoidance | Between Groups | 398.239 | 2 | 199.119 | 8.505 | .000 |
| | Within Groups | 4635.742 | 198 | 23.413 | | |
| | Total | 4032.398 | | | | |
| Somatic Anxiety | Between Groups | 108.265 | 2 | 54.133 | 2.773 | .065 |
| | Within Groups | 3864.998 | 198 | 19.520 | | |
| | Total | 3973.264 | 200 | | | |
| Worry | Between Groups | 1.724 | 2 | .862 | .0763 | .927 |
| | Within Groups | 2249.032 | 198 | 11.359 | | |
| | Total | 2250.756 | 200 | | | |
| Concentric Disruption | Between Groups | 26.653 | 2 | 13.327 | 1.099 | .335 |
| | Within Groups | 2400.342 | 198 | 12.123 | | |
| | Total | 2426.995 | 200 | | | |

Table 5 shows that there is a significant relationship between training on Mastery Avoidance (F=3.764, $p$<0.025), performance approach (F=6.661, $p$<0.002) and performance avoidance (F=8.505, $p$<0.000). Also, the table reveals that there is no significant relationship between the Mastery approach, emotion regulation and sports performance anxiety.

Table 6 divulges that the post hoc analysis of Mastery Avoidance, performance approach and performance avoidance. Turkey HSD test was employed as post hoc test. The table shows that in Mastery Avoidance there is a significant difference in the 1-5 year training age group compared to the 11-15 year training age as well as there is a significant difference in the 6-10 age group compared to the 11-15 training age group. Also, the table displays that there is a significant difference in the 1-5 training age group compared to the 6-10 and 11-15 training age groups in the Performance approach. Similarly, there is a significant training age group of 1-5 years compared to 11-15 years as well as 6-10 years compared to the 11-15 year training age group in Performance avoidance.

**Table 6:** Turkey post hoc Analysis test on significant Variable in ANOVA

| Variable | Training Age | | | Mean difference | Significance |
|---|---|---|---|---|---|
| | 1-5 Years | 6-10 years | 11-15 years | | |
| Mastery Avoidance | 13.53 | 13.29 | | .244 | .930 |
| | 13.53 | | 15.86 | -2.324 | .041 |
| | | 13.29 | 15.86 | -2.568 | .022 |
| Performance Approach | 13.09 | 14.98 | | -1.887 | .014 |
| | 13.09 | | 16.04 | -2.947 | .006 |
| | | 14.98 | 16.04 | -1.060 | .509 |
| Performance Avoidance | 11.93 | 13.04 | | -1.103 | .294 |
| | 11.93 | | 16.25 | -4.317 | .000 |
| | | 13.04 | 16.25 | -3.214 | .008 |

**Regression Analysis:** A linear regression analysis was used to test if the Training age significantly predicted Emotion regulation, Sports performance anxiety and Achievement goal Table 7.

**Table 7:** Regression model of training age on emotion regulation achievement goal and Sports performance anxiety

| Independence Variable | B | SE | Beta | T | P | VIF | Adjusted $R^2$ |
|---|---|---|---|---|---|---|---|
| Cognitive Reappraisal | .004 | .007 | .039 | .495 | .621 | 1.299 | .060 |
| Expressive Suppression | -.008 | .009 | -.066 | -.844 | .400 | 1.317 | |
| Mastery approach | .002 | .014 | .011 | .120 | .905 | 1.699 | |
| Mastery avoidance | -.009 | .015 | -.058 | -.620 | .536 | 1.889 | |
| Performance Approach | .019 | .015 | .124 | 1.320 | .189 | 1.869 | |
| Performance Avoidance | .028 | .014 | .202 | 2.052 | .041 | 2.056 | |
| Somatic Anxiety | .015 | .013 | .097 | 1.172 | .243 | 1.454 | |
| Worry | -.020 | .017 | -.096 | -1.168 | .244 | 1.440 | |
| Concentration Disruption | .013 | .017 | .065 | .777 | .438 | 1.502 | |

Dependent variables=Training age, R= 0.320, R2= 0.103, (Anova: F=2.426 p=.012) Durbin-Watson: 0.200

The results indicated the model explained 10% of the variance in depression (R2=0.60, F (9,191) = 2.426). Training age was significantly predicted by the performance avoidance sub-variable of achievement goal (B =.028, t = 2.052, P=0.04). Also, shows that training age does not significantly predict other sub-variables of Achievement, goal emotion regulation, and Sports performance anxiety.

## Discussion

In this study researcher aimed to examine the relationship between achievement goals, emotion regulation, sports performance anxiety and Training age. Also, assessed the difference between different levels of training age groups along with Emotion regulation achievement goal and sports performance anxiety. The achievement goals emotion regulation and Sports Performance anxiety predicted Training age. The primary researcher has checked the reliability and validity of the questionnaires. The Cronbach alpha value was above 0.65, The Cronbach value above is acceptable (Griethuijsen *et al*., 2014, Taber KS, 2018) [28, 27]. The confirmatory analysis shows that the CMIN/DF value is less than 1.749 which was an acceptable fit ≤ 3 indicates an acceptable fit (Kline, 1998) [18]. Good of fit Index (GFI) is ≥ .90 is an acceptable fit (Hu & Bentler 1998) [17] was obtained above .931. Parsimony Goodness of Fit Index PGFI Is above .05 is an acceptable fit (Hooper *et al*., 2008) [16]. Incremental Fit Index (IFI) in which closer to 1 indicates a very good fit while 1 indicates a perfect fit as both were found as .928 very good fit. The result indicates that values are above .57. The value of the comparative fit index (CFI) was above .924 which was an acceptable fit ≥ .90 (West *et al*. 2012; Fan *et al*. 1999) [31, 11]; the value of RMSEA should be ≤ 0.09 for a reasonable fit (Hooper *et al*., 2008) [16] the value obtained was .05 which was a good fit. All of the questionnaires selected for the study were reliable and validated on the judo players.

The result of the study showed that when compared to the training age Cognitive Reappraisal and Expressive Suppression, there is no significant difference across the Training age group. Compared to the other two age groups, the 6-10 years of training age mean score demonstrates slightly greater expressive suppression and cognitive reappraisal. Similarly, the study shows that when compared to the training group on Achievement goal, there is a significant difference in Mastery Avoidance, Performance Approach and Performance Avoidance but there is no significant difference in Mastery approach. Compared to other training age groups, the mean score for the 11-15 years old training group indicates a higher achievement goal. When comparing Sports Performance Anxiety to training age groups the result shows that there is no significant difference. The training age group of 11 to 15 years old has a mean score that indicates they are more anxious than other training age groups.

It was also revealed that performance avoidance, which is a sub-variable of achievement goals, positively predicts training age.

## Conclusion

**After examining the study's results, the following conclusions were obtained**

- All questionnaires used in this study were validated by Indian judo players
- 6-10 year training age group have higher emotion regulation than the 1-5 and 11-15 years training age groups
- The 11-15 year training age group have higher Achievement goal and sports performance anxiety than the 1-5 and 6-10 years training age groups
- There is a significant difference across Training age groups in performance approach, performance-avoidance and mastery avoidance.
- There were no significant differences across the Training age group in, the mastery approach. Emotion regulation and sports performance anxiety.
- Performance avoidance positively predicts Training age.

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