# INVESTIGATION OF MENTAL SKILL AMONG MALE WEIGHT LIFTERS: COMPARATIVE STUDY

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## Abstract

The purpose of this investigation was to compare among male weight lifters Inter-College Level ($N_1$=20); State Level ($N_2$=15) and National Level ($N_3$=12) on the variable, "Mental Skill". Forty-Seven (N=47), subjects between the age group of 21-26 years volunteered to participate in the study. The data was collected through the administration of Mental Skill Questionnaire as developed by Hardy and Nelson (1996). The six areas of mental skills covered by this questionnaire are: Imagery Ability, Mental Preparation, Self Confidence, Anxiety and Worry Management, Concentration Ability and Relaxation Ability. The independent-samples *t* test (between-groups design) were used to evaluates the difference between the means of two independent or unrelated groups. The level of significance was set at 0.05. Imagery Ability: - The test statistic F equals 0.344654, is in the 95% critical value accepted range: [-∞: 3.2093]. Mental Preparation: - The test statistic F equals 1.795669, is in the 95% critical value accepted range: [-∞: 3.2093]. Self Confidence: - The test statistic F equals 0.0436917, is in the 95% critical value accepted range: [-∞: 3.2093]. Anxiety and Worry Management: - The test statistic F equals 1.007132, is in the 95% critical value accepted range: [-∞: 3.2093]. Concentration Ability: - The test statistic F equals 0.713491, is in the 95% critical value accepted range: [-∞: 3.2093]. Relaxation Ability: - The test statistic F equals 0.0166948, is in the 95% critical value accepted range: [-∞: 3.2093] andMental Skills: - The test statistic F equals 0.422413, is in the 95% critical value accepted range: [-∞: 3.2093].

**Keywords:** Mental Skill, Weight Lifters, Imagery Ability, Mental Preparation Self Confidence, Anxiety and Worry Management, Concentration Ability, Relaxation Ability.

## Introduction

Sport has emerged as an important global phenomenon. The expectations and demands placed upon athletes in both amateur and professional competitive arenas can often be overwhelming, and this can lead to mental breakdown during the competition itself (Hill & Shaw, 2012). There are instances where athletes are unable to replicate their training performance during a competitive situation due to the added pressure and stress that the competitive environment brings (Hill, Hanton, Matthews, & Fleming, 2010). Mental skills have been shown to significantly moderate the direction and intensity of competitive anxiety symptoms (Fletcher & Hanton, 2001; Neil, Mellalieu, & Hanton, 2006; Nicholls, Jones, Polman, & Borkoles, 2009). The concept of mental skills has been defined by Vealey (1988) as the ability to maintain and regulate mental qualities, such as self-confidence, composure and clear mindedness. Mental skills training involves the implementation of techniques, such as goal setting, relaxation, pre-performance routines, positive self-talk, arousal regulation, and visualization. These techniques help an individual to better understand their own mental state, and exercise control over the thoughts and emotions arising before or during competition (Behncke, 2004; Holland, Woodcock, Cumming, & Duda, 2010). Mental skills training can change the manner by which athletes appraise their competitive environment, and endow them with the skills and ability to change their cognitions even while competing (Gee, 2010; Jones, 2003).

**Subjects: -**

Forty-Seven (N=47), subjects between the age group of 21-26 years volunteered to participate in the study. The subjects were possessively assigned into three groups: -

- Inter-College Level ($N_1$=20);
- State Level ($N_2$=15);
- National Level ($N_3$=12)

**Variables: -**

**Mental Skills Questionnaire**

The data was collected through the administration of Mental Skill Questionnaire as developed by Hardy and Nelson (1996). The six areas of mental skills covered by this questionnaire are:

- Imagery Ability
- Mental Preparation
- Self Confidence
- Anxiety and Worry Management
- Concentration Ability
- Relaxation Ability
- Mental Skills

**Questionnaire Reliability**

The Questionnaire used in this study is of Hardy and Nelson's (1996) which is standardized and various studies in different sports and games in India and abroad were done and hence considered to be accurate and reliable.

**Reliability of Subjects**

To establish subject reliability in the selected psychological variables in the Questionnaire were given at same time in the same conditions.

**Criterion Measures**

Test of mental skill questionnaire by Hardy and Nelson (1996) devised this test in order to look at the noteworthy variances in wrestling players at various states of their performance upon variables; "Mental Skills", who played in Inter-College and Inter-University tournaments. The questionnaire was given to be filled in a particular time frame before competition.

**Scoring**

Scoring was calculated by verifying each segment question rating from strongly disagree to strongly agree and the rating scale varied from 1 to 6. Each individual circled his choice which denoted a score and which was not mentioned to the players. The answer denoted the score of that individual for that particular question. Each question was scored and total of each segment was the score of the total 4 questions given in the questionnaire. The results of the questionnaire, was agreed by the researcher to be kept confidential.

## Statistical Application

One-way analysis of variance ANOVA was employed within the different factors of the variables selected in the study the level of significance was set at 0.05.

## Results

**Imagery Ability**

| Source | DF | Sum of Square | Mean Square | F Statistic | P-value |
|---|---|---|---|---|---|
| **Groups** (between groups) | 2 | 20.769859 | 10.384930 | 0.344654 | 0.710361 |
| **Error** (within groups) | 44 | 1325.783275 | 30.131438 | | |
| **Total** | 46 | 1346.553135 | 29.272894 | | |

**$H_0$ hypothesis**

Since p-value > α, $H_0$ is accepted. The averages of all groups considered to be equal. In other words, the difference between the averages of all groups is not big enough to be statistically significant.

**P-value**

p-value equals **0.710361**, [p ($x \leq F$) = 0.289639]. This means that if we would reject $H_0$, the chance of type1 error (rejecting a correct $H_0$) would be too high: 0.7104 (71.04%). The bigger the p-value the stronger it supports $H_0$.

**The statistics**

The test statistic F equals **0.344654**, is in the 95% critical value accepted range: [-∞: 3.2093].

**Mental Preparation**

| Source | DF | Sum of Square | Mean Square | F Statistic | P-value |
|---|---|---|---|---|---|
| **Groups** (between groups) | 2 | 107.435445 | 53.717722 | 1.795669 | 0.177969 |
| **Error** (within groups) | 44 | 1316.266611 | 29.915150 | | |
| **Total** | 46 | 1423.702056 | 30.950045 | | |

**H0 hypothesis**

Since p-value > α, H0 is accepted. The averages of all groups considered to be equal. In other words, the difference between the averages of all groups is not big enough to be statistically significant.

**P-value**

p-value equals 0.177969, [p (x ≤ F) = 0.822031]. This means that if we would reject H0, the chance of type1 error (rejecting a correct H0) would be too high: 0.1780 (17.80%) The bigger the p-value the stronger it supports H0

**The statistics**

The test statistic F equals **1.795669**, is in the 95% critical value accepted range: [-∞: 3.2093].

**Self Confidence**

| Source | DF | Sum of Square | Mean Square | F Statistic | P-value |
|---|---|---|---|---|---|
| **Groups** (between groups) | 2 | 2.612765 | 1.306383 | 0.0436917 | 0.957290 |
| **Error** (within groups) | 44 | 1315.599856 | 29.899997 | | |
| **Total** | 46 | 1318.212622 | 28.656796 | | |

**$H_0$ hypothesis**

Since p-value > α, $H_0$ is accepted. The averages of all groups considered to be equal. In other words, the difference between the averages of all groups is not big enough to be statistically significant.

**P-value**

p-value equals **0.957290**, [p (x ≤ F) = 0.0427095]. This means that if we would reject $H_0$, the chance of type1 error (rejecting a correct $H_0$) would be too high: 0.9573 (95.73%). The bigger the p-value the stronger it supports $H_0$.

**The statistics**

The test statistic F equals **0.0436917**, is in the 95% critical value accepted range: [-∞: 3.2093]

**Anxiety and Worry Management**

| Source | DF | Sum of Square | Mean Square | F Statistic | P-value |
|---|---|---|---|---|---|
| **Groups** (between groups) | 2 | 62.331577 | 31.165788 | 1.007132 | 0.373529 |
| **Error** (within groups) | 44 | 1361.583294 | 30.945075 | | |
| **Total** | 46 | 1423.914870 | 30.954671 | | |

**$H_0$ hypothesis**

Since p-value > α, $H_0$ is accepted. The averages of all groups considered to be equal. In other words, the difference between the averages of all groups is not big enough to be statistically significant.

**P-value**

p-value equals 0.373529, [p (x ≤ F) = 0.626471]. This means that if we would reject H0, the chance of type1 error (rejecting a correct H0) would be too high: 0.3735 (37.35%) The bigger the p-value the stronger it supports H0.

**The statistics**

The test statistic F equals **1.007132**, is in the 95% critical value accepted range: [-∞: 3.2093].

**Concentration Ability**

| Source | DF | Sum of Square | Mean Square | F Statistic | P-value |
|---|---|---|---|---|---|
| **Groups** (between groups) | 2 | 32.686525 | 16.343263 | 0.713491 | 0.495511 |
| **Error** (within groups) | 44 | 1007.866732 | 22.906062 | | |
| **Total** | 46 | 1040.553257 | 22.620723 | | |

**$H_0$ hypothesis**

Since p-value > α, $H_0$ is accepted. The averages of all groups considered to be equal. In other words, the difference between the averages of all groups is not big enough to be statistically significant.

**P-value**

p-value equals **0.495511**, [p (x ≤ F) = 0.504489]. This means that if we would reject $H_0$, the chance of type1 error (rejecting a correct $H_0$) would be too high: 0.4955 (49.55%) The bigger the p-value the stronger it supports $H_0$.

**The statistics**

The test statistic F equals **0.713491**, is in the 95% critical value accepted range: [-∞: 3.2093].

**Relaxation Ability**

| Source | DF | Sum of Square | Mean Square | F Statistic | P-value |
|---|---|---|---|---|---|
| **Groups** (between groups) | 2 | 0.902125 | 0.451062 | 0.0166948 | 0.983450 |
| **Error** (within groups) | 44 | 1188.800075 | 27.018184 | | |
| **Total** | 46 | 1189.702200 | 25.863091 | | |

**$H_0$ hypothesis**

Since p-value > α, $H_0$ is accepted. The averages of all groups considered to be equal. In other words, the difference between the averages of all groups is not big enough to be statistically significant.

**P-value**

p-value equals **0.983450**, [p (x ≤ F) = 0.0165500]. This means that if we would reject $H_0$, the chance of type1 error (rejecting a correct $H_0$) would be too high: 0.9835 (98.35%) The bigger the p-value the stronger it supports $H_0$.

**The statistics**

The test statistic F equals **0.0166948**, is in the 95% critical value accepted range: [-∞: 3.2093].

**Mental Skills**

| Source | DF | Sum of Square | Mean Square | F Statistic | P-value |
|---|---|---|---|---|---|
| **Groups** (between groups) | 2 | 149.004255 | 74.502128 | 0.422413 | 0.658093 |
| **Error** (within groups) | 44 | 7760.400065 | 176.372729 | | |
| **Total** | 46 | 7909.404320 | 171.943572 | | |

**$H_0$ hypothesis**

Since p-value > α, $H_0$ is accepted. The averages of all groups considered to be equal. In other words, the difference between the averages of all groups is not big enough to be statistically significant.

**P-value**

p-value equals **0.658093**, [p (x ≤ F) = 0.341907]. This means that if we would reject $H_0$, the chance of type1 error (rejecting a correct $H_0$) would be too high: 0.6581 (65.81%) The bigger the p-value the stronger it supports $H_0$

**The statistics**

The test statistic F equals **0.422413**, is in the 95% critical value accepted range: [-∞: 3.2093].

## Conclusions

- **Imagery Ability: -** The test statistic F equals **0.344654**, is in the 95% critical value accepted range: [-∞: 3.2093].
- **Mental Preparation: -** The test statistic F equals **1.795669**, is in the 95% critical value accepted range: [-∞: 3.2093].
- **Self Confidence: -** The test statistic F equals **0.0436917**, is in the 95% critical value accepted range: [-∞: 3.2093].
- **Anxiety and Worry Management: - The** test statistic F equals **1.007132**, is in the 95% critical value accepted range: [-∞: 3.2093].
- **Concentration Ability: -** The test statistic F equals **0.713491**, is in the 95% critical value accepted range: [-∞: 3.2093].
- **Relaxation Ability: -** The test statistic F equals **0.0166948**, is in the 95% critical value accepted range: [-∞: 3.2093]
- **Mental Skills: -** The test statistic F equals **0.422413**, is in the 95% critical value accepted range: [-∞: 3.2093].

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**Conflict of interests**

- The authors declare no conflict of interest.

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