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**Jatinder Pal**

Research Scholar, Department of  
Physical Education, CT  
University, Ludhiana, Punjab,  
India

**Dr. Pravin Kumar**

Professor, Department of  
Physical Education, CT  
University, Ludhiana, Punjab,  
India

## Study of mental toughness in male weight lifters players: a comparative investigation

**Jatinder Pal and Dr. Pravin Kumar**

### Abstract

**Study Aim:** To assess the differences of Mental Toughness among Inter-College ( $n_1=50$ ) and Inter-University ( $n_2=25$ ) male Weight lifters players.

**Methods:** Seventy-Five ( $N=75$ ) subjects between the age group of 21-26 years (Mean  $\pm$  SD: age  $19.86 \pm 2.55$ , body height  $168.06 \pm 4.48$ , body weight  $60.45 \pm 3.36$  kg) volunteered to participate in the study.

**Statistical Application:** The independent-samples *t* test (between-groups design) were used to evaluate the difference between the means of two independent or unrelated groups. The level of significance was set at 0.05.

**Results:** Reboundability: The *t*-value is 0.913. The *p*-value is .182. Means not significantly different at .05 level of significance. Ability to Handle Pressure: The *t*-value is 0.677. The *p*-value is .475. Means not significantly different at .05 level of significance. Concentration: The *t*-value is 0.677. The *p*-value is .249. Means not significantly different at .05 level of significance. Confidence: The *t*-value is 0.235. The *p*-value is .407. Means not significantly different at .05 level of significance and Motivation: The *t*-value is 0.311. The *p*-value is .378. Means not significantly different at .05 level of significance.

**Keywords:** Weight Lifters, Mental Toughness, Reboundability, Ability to Handle Pressure, Concentration, Confidence and Motivation

### Introduction

Athletes' success or failure is multi factorial. It depends on the combination of many factors including physical, tactical, technical and psychological factors. Psychological factor is usually the determinant that differentiates a winner and a loser in sports (Brewer, 2009) [3]. For example, Weinberg and Gould (2003) [10] indicated that mental ability contributed over 50% in athletes' success when competing against the opponents. In addition, (Gould, Hodge, Peterson, and Petlichk off (1987) [6] stated that mental toughness was the most important for success in wrestling (rated as 82%). In a study involving ten Olympians, they reported mental toughness is one of the highest ranked psychological characteristics that determine at successful performance. Athletes, coaches, and applied sports psychologists have consistently referred to mental toughness as one of the most important psychological characteristics related to outcomes and success in the elite sport. However, it is probably one of the least understood terms used in applied sport psychology (Jones, Hanton, & Connaughton, 2002) [8]. The creation of a clear conceptualization of mental toughness has been a challenge because previous literature on mental toughness has lacked the ability to distinguish between "what mental toughness is" and the essential attributes of being mentally tough (Crust, 2007) [5]. The tenets of mental toughness portrayed essentially takes mental toughness out of the control of the performer into the hands of the opponent, thus making the definition and operationalization of mental toughness other-dependent. (Andersen (2011) [1]. Additionally, studies have alluded to significant motivational differences between elite and non-elite Olympic weightlifters greater anxiety management skills and self-confidence among more successful than less successful equestrian athletes. (Baker & Horton, 2004) [2]. Each psychological variable has its unique contribution towards sports performance but some of the variables are preferably and specifically suitable for few games. As a sports person mental toughness along with flow state is very important pre-requisite for achieving success in any sport. (Gucciardi *et al.* (2008) [7] found evidence that mental toughness can explain how physically talented athletes become

### Correspondence

**Jatinder Pal**

Research Scholar, Department of  
Physical Education, CT  
University, Ludhiana, Punjab,  
India

great athletes. (Bull *et al.* (2005) [4] observed on the basis of research that there is also the potential for difference in mental toughness for every individual, sport and situation, from one sport to the other. It is further illustrated that mental aspects affect the athlete's performance in competition. It is only when the mind gets tense then the body gets tense. In competition, some athletes cannot seem to control their

emotions, as demonstrated by increased emotional and for that increased heart rate and respiration rate (physiological arousal). Physiological arousal often negatively impacts on performance (Loehr *et al.*, 1992) [9]. The mind then is the source of our success or failure. A review of literature pointed to mental toughness as being one of the more important determinants of peak athletic performance.

**Table 1:** Subject's Demographics of Age (yrs), Body Height (cm) and Body Weight (kg).

Variables	Simple Size (N=75)		
	Total (N=75)	Inter-College (n <sub>1</sub> =50)	Inter-University (n <sub>2</sub> =25)
Age (yrs)	19.85 ± 2.55	20.02 ± 2.55	19.52 ± 2.56
Body Height (cm)	168.22 ± 4.47	168.06 ± 4.37	168.56 ± 4.73
Body Weight (kg)	60.36 ± 3.40	60.32 ± 3.42	60.44 ± 3.42

**Table 2:** Age Value, Frequency and Frequency %

Value	Frequency	Frequency %
17	15	20.00
18	17	22.67
19	11	14.67
20	2	2.67
21	9	12.00
22	6	8.00
23	7	9.33
24	3	4.00
25	5	6.67

**Table 3:** Body Height Value, Frequency and Frequency %

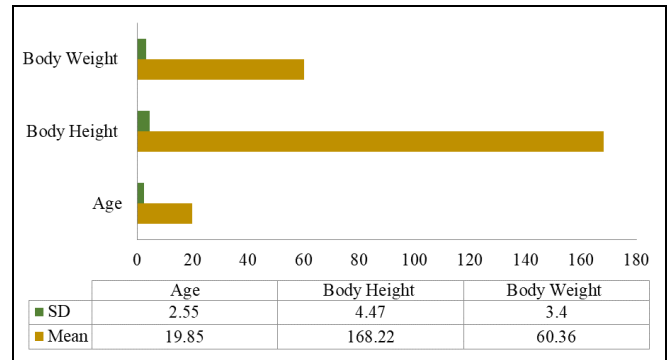
Value	Frequency	Frequency %
160	2	2.67
161	6	8.00
162	4	5.33
163	4	5.33
165	2	2.67
166	8	10.67
167	9	12.00
168	3	4.00
169	3	4.00
170	7	9.33
171	10	13.13
172	2	2.67
173	1	1.33
174	8	10.67
175	6	8.00

**Table 4:** Body Weight Value, Frequency and Frequency %

Value	Frequency	Frequency %
55	6	8.00
56	15	20.00
58	4	5.33
59	3	4.00
60	5	6.67
61	8	10.67
62	4	5.33
63	13	17.33
64	12	16.00
65	7	9.33

**Subjects**

Seventy-Five (N=75) subjects between the age group of 21-26 years (Mean ± SD: age 19.86 ± 2.55, body height 168.06 ± 4.48, body weight 60.45 ± 3.36 kg) volunteered to participate in the study. The subjects were possessively assigned into two groups: - Group-A: Inter-College Level (n<sub>1</sub> = 50); Group-B: Inter-University (n<sub>2</sub> = 25).



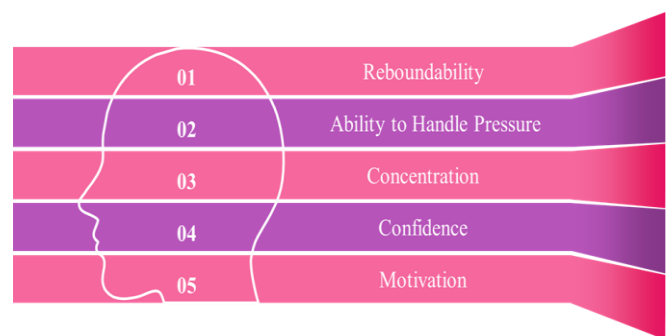
**Fig 1:** Illustration of Subject's Demographics of Age (yrs) Body Height (cm) and Body Weight (kg).

**Variables**

**Mental Toughness**

This scale is a standardized tool which has already been used in many research/psychological investigations. After consulting relevant literature, a 30 items self-report inventory with five sub-scales was used to measure mental toughness:

- Reboundability
- Ability to Handle Pressure
- Concentration
- Confidence
- Motivation



**Fig 2:** Psychological variables (i.e., Reboundability, Ability to Handle Pressure, Concentration, Confidence and Motivation).

**Administration of Test**

This scale is a standardized tool which has already been used in many research/psychological investigations. After consulting relevant literature, a 30 items self-report inventory with five sub-scales was used to measure mental toughness. This scale is a standardized tool which has already been used in many research/psychological investigations. After consulting relevant literature, a 30 items self-report inventory with five sub-scales was used to measure mental toughness.

Each dimension measured by six questions, with 'Yes' or 'No' by a tick mark response. The questionnaire is suitable for the age group as selected for the study.

▪ **Reliability**

The reliability of the scale was determined by calculating reliability coefficient on sample of 216 subjects. The split half reliability coefficient was found to be 0.84.

▪ **Validity**

The validity coefficient obtained is 0.87 which is significant beyond .01.

▪ **Scoring Key**

Scoring key of the present scale is given as follows: -  
The mental toughness questionnaire measures the following five dimensions:-

**Section-1:** Items 1-6 deal with reboundability or your skill at mentally bouncing back from setbacks and mistakes. Mental toughness depends on your ability to quickly leave your mistakes and failure behind you. Hanging onto your mistakes will get you into big trouble, performance-wise. Athletes, who dwell on their mistakes while the competition continues, end up making more. Score 1 point for each of the following answers:

Item No	Response
1.	False
2.	False
3.	True
4.	False
5.	False
6.	True

**Section-2:** Items 7-12 deal with the ability to handle pressure. Without the ability to stay calm in the clutch, an athlete will always underachieve. Peak performance demands that you are relaxed once the performance begins. While a little nervousness is critical for getting "up" for a game/match/race and performing at your best, ("good nervousness") too much nerves ("bad nervousness") will tighten your muscles and send your performance down the tubes. Score 1 point for each of the following answers:

Item No	Response
7.	True
8.	False
9.	False
10.	False
11.	False
12.	False

**Section-3:** Items 13-18 deal with your concentration ability. In every sport, your ability to focus on what's important and block out everything else is one of the primary keys to performance excellence. Poor concentration is the major reason why athletes choke and get stuck in performance slumps. Getting psyched out or intimidated is a direct result of concentrating on the wrong things. Score 1 point for each of the following answers:

Item No	Response
13.	False
14.	False

15.	False
16.	False
17.	True
18.	False

**Section-4:** Items 19-24 deal with your level of confidence and the factors that affect confidence. One characteristic of the mentally tough athlete is he/she possesses a confidence level that seems to be unshaken by setbacks and failures. Under the pressure of competition, low confidence will neutralize natural ability, hard work and talent. Similarly, high confidence will enhance an athlete's training and God given talents, lifting their performance to the next level. Score 1 point for each of the following answers:

Item No	Response
19.	True
20.	False
21.	True
22.	True
23.	False
24.	False

**Section-5:** Items 25-30 deal with motivation. Motivation is the fuel that will drive your training to a successful completion and the accomplishment of your goals. Without adequate motivation athletes get stuck having "permanent potential." Without motivation you won't put in the work necessary to become a winner. Your motivation allows you to pick yourself up after a setback and keep going. Score 1 point for each of the following answers:

Item No	Response
25.	True
26.	True
27.	True
28.	False
29.	True
30.	True

**Interpretation**

A score of 6 in any one of the five sections indicates a special strength in that area. A 5 indicates solid skill, and 4 or less highlights that particular area as a mental weakness that needs to be addressed. For example a "6" in "reboundability" indicates consistent ability to bounce back quickly from mistakes, failures and losses. A score of "2" or "3" in section 2, handling competitive pressure, indicates the need for arousal control/relaxation training. Low scores in each section highlight problem areas. These "mental weaknesses" should then form mental training goals for you to help raise your overall performance to the next level. For example, a low score in the concentration section means that some of your poor performance is a direct result of your inability to control your focus of attention before and/or during competition. By putting some time and energy into practicing concentration exercises you will become a better overall athlete.

▪ **Overall Score**

A score of 26-30 indicates strength in overall mental toughness. Scores of 23-25 indicates average to moderate skill in mental toughness. Scores of 22 or below mean that you need to start putting more time into the mental training area.

**Statistical Application**

The independent-samples *t* test (between-groups design) were used to evaluate the difference between the means of two

independent or unrelated groups. The level of significance was set at 0.05.

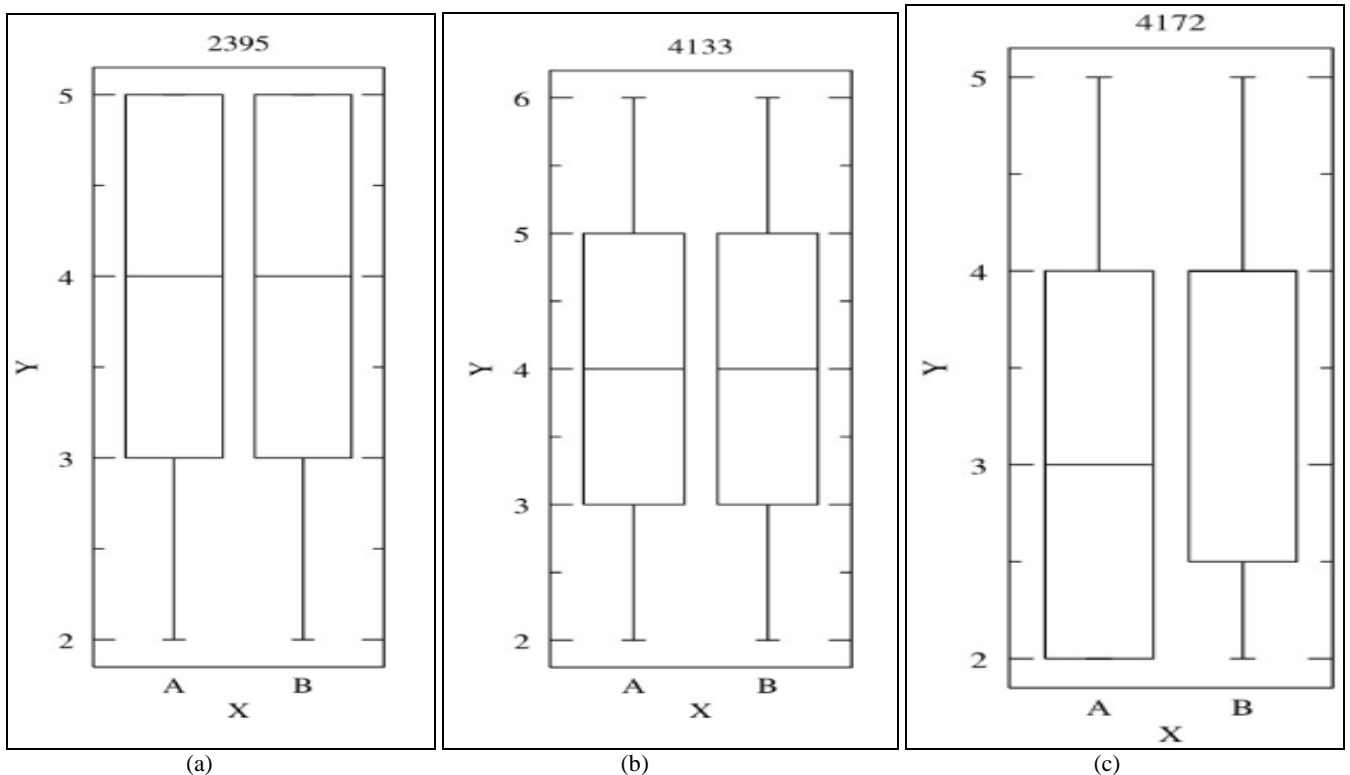
**Results**

**Table 5:** To analyses the levels in each study group

Variables	Group	Mean	Std. Deviation	Max.	Min.	t-value	p-value
Reboundability	Inter- College	3.78	0.954	5.00	2.00	0.913	.182
	Inter-University	4.00	1.04	5.00	2.00		
Ability to Handle Pressure	Inter- College	3.98	1.30	6.00	2.00	0.062	.475
	Inter-University	4.00	1.32	6.00	2.00		
Concentration	Inter- College	3.26	1.10	5.00	2.00	0.677	.249
	Inter-University	3.44	1.04	5.00	2.00		
Confidence	Inter- College	3.50	1.07	5.00	2.00	0.235	.407
	Inter-University	3.44	0.961	5.00	2.00		
Motivation	Inter- College	4.02	1.30	6.00	2.00	0.311	.378
	Inter-University	4.12	1.33	6.00	2.00		

A glance at Table-5 shows the Mean and Standard Deviation values of Reboundability of Inter-College and Inter-University Weight lifters players was  $3.78 \pm 0.954$  and  $4.00 \pm 1.04$  respectively. The t-value is 0.913. The p-value is .182. Means not significantly different at .05 level of significance. The Mean and Standard Deviation values of Ability to Handle Pressure of Inter-College and Inter-University Weight lifters players were  $3.98 \pm 1.30$  and  $4.00 \pm 1.32$  respectively. The t-value is 0.062. The p-value is .475. Means not significantly different at .05 level of significance. The Mean and Standard Deviation values of Concentration of Inter-College and Inter-University Weight lifters players were  $3.26 \pm 1.10$  and  $3.44 \pm 1.04$  respectively. The t-value is 0.677.

The p-value is .249. Means not significantly different at .05 level of significance. The Mean and Standard Deviation values of Confidence of Inter-College and Inter-University Weight lifters players were  $3.50 \pm 1.07$  and  $3.44 \pm 3.44$  respectively. The t-value is 0.235. The p-value is .407. Means not significantly different at .05 level of significance. The Mean and Standard Deviation values of Motivation of Inter-College and Inter-University Weight lifters players were  $4.02 \pm 1.30$  and  $4.12 \pm 1.33$  respectively. The t-value is 0.311. The p-value is .378. Means not significantly different at .05 level of significance.



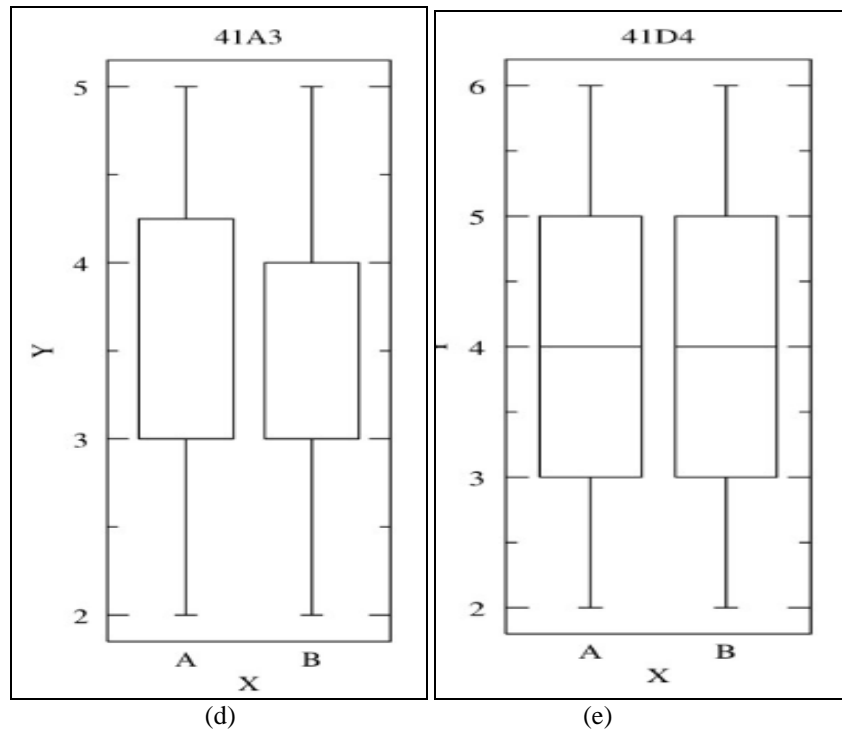


Fig 3: Illustration of Mean and Standard Deviation in each study group

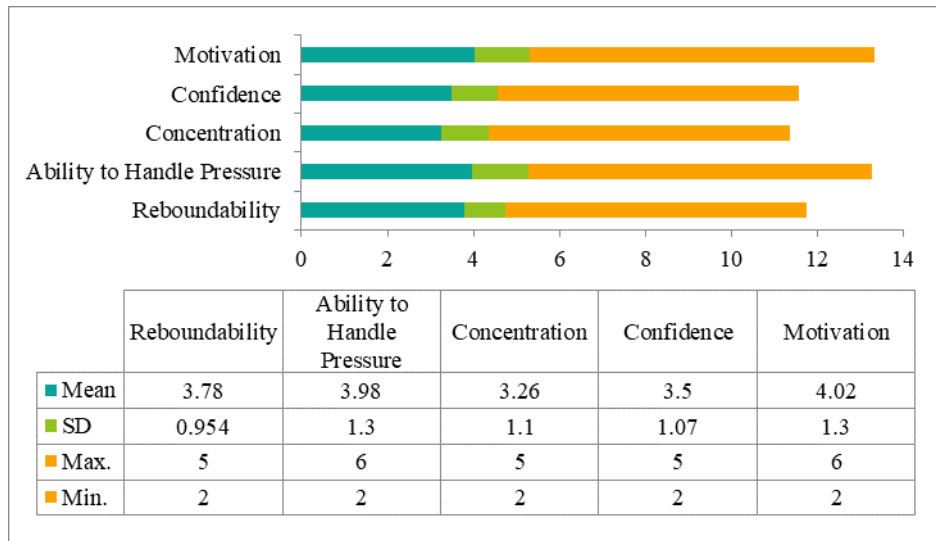


Fig 4: Illustration of Mean and Standard Deviation of Inter-College Weight lifters Players.

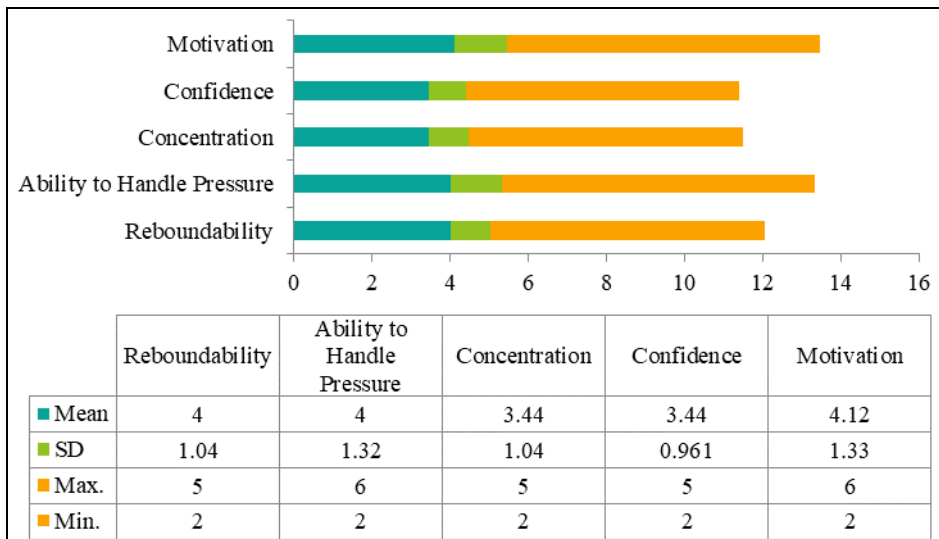


Fig 5: Illustration of Mean and Standard Deviation of Inter-University Weight lifters Players

### **Conclusions**

#### **Reboundability**

The t-value is 0.913. The p-value is .182. Means not significantly different at .05 level of significance.

#### **Ability to Handle Pressure**

The t-value is 0.677. The p-value is .475. Means not significantly different at .05 level of significance.

#### **Concentration**

The t-value is 0.677. The p-value is .249. Means not significantly different at .05 level of significance.

#### **Confidence**

The t-value is 0.235. The p-value is .407. Means not significantly different at .05 level of significance.

#### **Motivation**

The t-value is 0.311. The p-value is .378. Means not significantly different at .05 level of significance.

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#### **Conflict of interests**

- The authors declare no conflict of interest.

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