

Degrees Of Mental Toughness Among Table Tennis Players In The Northern Governorates In Palestine

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Abstract

This research aims to identify the degrees of mental toughness among table tennis players in the northern governorates in Palestine. The researchers followed the descriptive approach and selected a purposive sample. The sample consisted of all of the (60) players registered at the Palestinian Table Tennis Federation in the northern governorates. The researchers used the scale of mental toughness by James Loehr (1993), which was translated by Majda Ismael and Osama Abdulrahman (2007). Results showed that the degree of mental toughness was medium (64%). The dimension related to motivation ranked first at a relative weight of 70.17%, positive energy ranked second at a relative weight of 69.67%, then attitude control ranked third at 63.67%, self-confidence ranked fourth at 65.33%, visual control ranked fifth at 61.67%, focus control ranked sixth at 58.33%, and negative energy ranked seventh at 52.2%. Results also showed statistically significant differences at $\alpha \leq 0.05$ based on the residence variable and in favor of living in the cities. There were no statistically significant differences for the variables of age and educational degree. The researchers recommend the Palestine Table Tennis Federation to hold various training and educational courses for coaches and players, especially on mental toughness.

Keywords: Mental toughness, Table tennis.

Introduction and Literature Review

Sport psychology has recently acquired a significant status among other sport sciences. This applied science is concerned with athletes' behavior, experience and mental processes in all fields relevant to sport and physical exercise.

Several scholars specialized in sport psychology perceive mental and psychological capacity of athletes highly important. The differences in physical abilities and skills

among players are no longer essential. The real difference lies in the athlete's mental and psychological capacity, which is a vital determinant of results in competitions and is important in achieving the best sport performances (Al-Zahrani, 2020, 1).

Most highly-skilled players have approximated physical abilities and skills, but they are distinguished by their mental and psychological capacities (Alawi, 2012, 16).

Psychology sport scholars have considered mental and psychological capacities as greatly important in sport competitions. They referred to an established relation between mental capacities and sport advancement. 'Mental toughness' is deemed a necessary part of mental and psychological skills a player should obtain (Al-Ashqar, 2016, 103).

Psychological skills constitute a major aspect in coaching players. Such skills have been viewed as a variable which should be improved, exactly as other physical and planning skills. Champions share approximate levels of physical and planning skills, so psychology as a factor plays a major role in determining the winner (Buii, 2011, 35).

Athletes' success in any sport requires obtaining multiple mental and psychological capacities along with good physique and skills (Al-Zahrani, 2020, 1).

Mental toughness comprises several psychological characteristics: commitment, control and challenge. Any player should have mental toughness to enable him to face pressure caused by physical exercise, continue working with enthusiasm, rebuild confidence and achieve the required goals (Ray, 2003).

Mental toughness is the highest psychological stage an athlete can reach during practice or competitions through exercise, focus, steadiness under pressure and control in order to reach perfection when pressure caused by competitiveness increases (McAfee, 2014).

Furthermore, mental toughness acts as a part of psychological resistance against pressure and psychological crises. It can save athletes from any negativity resulting from practice, competitions and life pressure (such as family, work, school, colleagues, and clubs). Mental toughness functions as a mediator that balances between psychological pressure and mental health (Joanna, 2017, 27).

Shaimaa (2021) referred to how mental toughness training helped improve taekwondo players' poomsae performance. Al-Jawhari et al. (2021) revealed in their study the notable impact of mental toughness training on improving the skill performance level of junior tennis players. Al-Zahrani (2020) confirmed the existence of a strong relation between mental toughness and performance strategies determinants among football players at Taif University. Nassir et al. (2019) referred to the positive relation between mental toughness and improvement of competitive behavior among Jordan's national basketball team.

Tennis is a competitive sport in which mental abilities play a major role in achieving high levels. It has even relied on human kinetic activities sciences such as anatomy, physiology and sport psychology so as to help athletes reach optimal levels of performance (Al-Jawhari et al., 2021, 23).

Table tennis requires a high level of attention, quick thinking, brilliance and good vision. These function as major and influential factors in improving a player's planning abilities and skills. Ignoring these aspects may lead to sabotaging all other preparations and a player's technical level (Shawqi, 2002, 17).

Table tennis is known for its special individualistic nature. The table and ball are small, the ball's speed is high, the tennis bat itself is also small, and the method of holding the bat and place from where the ball is thrown require certain methods and skills a player should have. These skills require mental capabilities such as visualization, confidence, focus and other mental toughness determinants (Ibrahim, 2016, 659).

The current researchers believe that mental toughness plays a major role in increasing table tennis players' ability to handle pressure during competitions, and so increases their ability to face mental, skill, psychological and emotional pressures.

Research Problem

The current researchers identified the research problem based on their experiences as former table tennis players, coaches and teachers of university table tennis teams. Through their observation of Northern Governorates Table Tennis Super League, the researchers found that the burdens the players carry due to practice and competition pressure leads to lowering the performance of some of them during the games. Their performances appear lower than usual despite their commitment to the training programs. In addition, they lack self-control when they are under severe psychological pressure and tension, so they lose focus and are easily distracted. They also lack self-confidence and are incapable of handling psychological pressure due to competitions, which also negatively affects their level of performance. The players do not have the required mental toughness to win.

The researchers also noticed that club coaches focus more on the players' skills, planning abilities and physique, yet they disregard their psychology, which is the winning factor when the players' skills are approximate. Psychological skills, mostly mental toughness, are essential in achieving excellence and victory. There is a limited number of studies that examines the degree of mental toughness among players in general, and table tennis players in Palestine in particular.

In comparison with players' results in Arab and world competitions, the results of Palestinian players show great differences. The most recent participation happened in the Asian Cup 25 in 2021, but the Palestinian national table tennis team did not obtain any rank, which could be due to the low degree of mental toughness they have. World and Arab players have more self-confidence and the ability to face any psychological pressures during competitions. All of these reasons pushed for the need for a scientific study that could verify such hypothesis. Therefore, the idea of this research

appeared to examine the degrees of mental toughness which includes (self-confidence, negative energy, focus control, visual control, motivation levels, positive energy and attitude control).

In order to confirm the nature of the problem, the researchers conducted a pilot study for the coaches and players in order to identify the degree to which these coaches and players are aware of the importance of mental toughness during competitions. The results showed that the coaches are not fully aware of the concept and dimensions of mental toughness and its relation to table tennis players' excellence during matches. The results also revealed that the players are subjected to multiple psychological and mental pressures such as tension, lack of focus, and lack of self-confidence which negatively influence their performance levels during competitions.

The researchers confirm that table tennis requires having all players enjoying good mental and psychological status in order to maintain the greatest amount of focus possible during a match.

Research Terms

Mental Toughness: Continuing to have constructive positive thinking without being over-emotional, and without quitting while maintaining realism in their [i.e., the players] performance (Sham'un, 2007, 34).

Research Objectives

- 1- Identifying the degree of mental toughness among table tennis players in the northern governorates in Palestine.
- 2- Identifying the order of mental toughness dimensions among table tennis players in the northern governorates in Palestine.
- 3- Identifying the differences in mental toughness degrees among the table tennis super league players based on

the variables (training age, level of education and place of residence).

Research Questions

- 1- What is the degree of mental toughness among table tennis players in the northern governorates in Palestine?
- 2- What is the order of mental toughness dimensions among table tennis players in the northern governorates in Palestine?
- 3- Are there any statistically significant differences at $\alpha \leq 0.05$ in the mental toughness degrees among the table tennis super league players based on the variables (training age, level of education and place of residence)?

Research Limitations

- **Time limitation:** Sport season for the year 2021 – 2022.
- **Place limitation:** The super league clubs in Salfit hall, and Shahid Abu

Ammar Hall in Bethlehem in the northern governorates in Palestine.

- **Sample limitations:** Table tennis super league players in Palestine.

Research Procedures:

- **Methodology:** The researchers used the descriptive approach using the questionnaire, which is suitable to the research.
- **Research population and sample:** The population included all table tennis super league players in Palestine and registered in Palestine Table Tennis Federation; i.e., 60 players distributed at 12 sport clubs: Sinjel Club, Nablus Youth Club, Young Men's Muslim Association, Ramallah and Salfit Islamic Club, Abnaa Al-Quds Club, Muazapheen Club, Tariq Ben Ziad Club, Qalandia Youth Club, Silwad and Shweika Sport Club.

Table (1) Sample's Demographic Variables

Variable	No.	Percentage
Training Age	8 years or less	59%
	9 – 17 years	27%
	+17 years	23%
	Total	100%
Residence	Camp	8%
	Village	38%
	City	54%
	Total	100%
Education	BA or less	47%
	BA	40%
	BA or more	13%
	Total	100%

Mental Toughness Scale

The researchers used James Loehr (1993) scale of mental toughness, which was translated by

Majda Ismael and Osama Abdulrahman (2007). It includes seven dimensions: self-confidence, negative energy, focus control, visual control, motivation levels, positive energy and attitude

control. The scale is distinguished for its high psychometric properties for players. The scale includes (42) statements, 6 statements for each dimension. The responses' weights are distributed to the scale's statements through Likert five-point scale (no, rarely, sometimes, mostly, and always) at (1, 2, 3, 4, 5). The highest response point is five, and the lowest is one.

First: Internal Consistency Reliability

The following table shows the scale's degree of internal consistency reliability which was reached through calculating Pearson correlation

coefficient. The equation was applied to a sample of eight junior players:

- 1- The calculation of the correlation coefficient between the point of every statement and the total points of the dimension to which it belongs.
- 2- The calculation of the correlation coefficient between the point of every statement and the total points of the scale.

Table (2) The correlation coefficient between the point of every statement and the total points of the dimension to which it belongs

**The correlation coefficient between the point of every statement and the total points of the scale
n = 8**

Dimensions		Self-confidence	Negative energy	Focus control	Visual control	Motivation	Positive energy	Attitude control
Statements								
1	+ dimension	0.845	0.833	0.912	0.866	0.884	0.933	0.991
	+ scale	0.802	0.876	0.903	0.834	0.854	0.944	0.953
2	+ dimension	0.945	0.887	0.877	0.929	0.876	0.948	0.863
	+ scale	0.856	0.844	0.834	0.935	0.831	0.953	0.817
3	+ dimension	0.876	0.943	0.892	8.18	0.854	0.867	0.921
	+ scale	0.844	0.902	0.912	0.901	0.921	0.831	0.907
4	+ dimension	0.932	0.953	0.944	0.946	0.811	0.935	0.884
	+ scale	0.789	0.914	0.852	0.916	0.912	0.903	0.879
5	+ dimension	0.933	0.883	0.918	0.925	0.893	0.935	0.892
	+ scale	0.801	0.872	0.928	0.928	0.881	0.818	0.912
6	+ dimension	0.896	0.927	0.853	0.897	0.933	0.865	0.877
	+ scale	0.965	0.897	0.829	0.955	0.946	0.829	0.833

- (r) value at 0.05 = 0.707

Table (2) shows that there is a statistically significant correlation at 0.05 between the point of every statement and the total points of the dimension to which it belongs; and between the point of every statement and the total points of the scale. It ranged between 0.955-0.789;

indicating the presence of internal consistency reliability.

Second: Scale Reliability: The researchers verified the scale's reliability through Cronbach's alpha coefficient as shown in the following table.

Table (3) Mental Toughness Scale Reliability through Cronbach's Alpha Coefficient

Scale Dimensions	Cronbach Alpha
Self-confidence	0.897
Negative energy	0.932
Focus control	0.883
Visual control	0.876
Motivation	0.887
Positive energy	0.935
Attitude control	0.945

- (r) value at 0.05 = 0.707

Table (3) shows that the reliability coefficient values are high, and that there is a statistically significant correlation at 0.05, which shows that the scale is highly reliable.

For the display and interpretation of results, the following percentages were used:

- 80% and higher = very high degree of mental toughness.
- 70-79.9% = high degree of mental toughness.
- 60-69.9% = medium degree of mental toughness.
- 50-59.9% = low degree of mental toughness.

- less than 50% = very low degree of mental toughness.

Results and Discussion

To answer the first question, “What is the degree of mental toughness among table tennis players in the northern governorates in Palestine?” the researchers calculated the mean, standard deviation and relative weight for each dimension in the questionnaire as shown in the following table.

Table (4) The mean, standard deviation, relative weight, degree of mental toughness, and order of responses of the research sample n = 60

No.	Mean	Standard deviation	Relative weight	Degree of toughness	Order
1	2.57	1.31	51	Low	38
2	2.68	1.31	54	Low	34
3	2.25	1.13	45	Very low	40
4	3.53	1.42	71	High	9
5	3.97	1.07	79	High	1
6	3.33	1.31	67	Medium	19
7	3.48	1.10	70	High	11
8	3.58	1.43	72	High	6
9	2.78	1.25	56	Low	33
10	3.53	1.13	71	High	9
11	3.15	1.29	63	Medium	29
12	3.52	1.28	70	High	11
13	3.63	1.16	73	High	4
14	3.22	1.42	64	Medium	26
15	3.48	1.28	70	High	11
16	2.18	1.05	44	Very low	41
17	2.62	1.32	52	Low	36
18	3.43	1.14	69	Medium	15

19	2.93	1.31	59	Low	30
20	3.58	1.28	72	High	6
21	3.58	1.23	72	High	6
22	3.27	1.25	65	Medium	22
23	2.40	1.12	48	Very low	39
24	3.28	1.30	66	Medium	20
25	3.40	1.24	68	Medium	17
26	3.40	1.12	68	Medium	17
27	3.73	1.10	75	High	6
28	3.20	1.27	64	Medium	26
29	3.43	1.21	69	Medium	15
30	2.68	1.17	54	Low	34
31	3.22	1.01	64	Medium	26
32	2.93	1.15	59	Low	30
33	3.50	1.19	70	High	11
34	3.28	1.14	66	Medium	20
35	3.25	1.22	65	Medium	22
36	3.23	1.35	65	Medium	22
37	2.93	1.18	59	Low	3
38	2.60	1.18	52	Low	36
39	2.00	1.13	40	Very low	42
40	3.75	1.11	75	High	2
41	3.27	1.26	65	Medium	22
42	3.65	1.25	73	High	4
Mean	3.68	1.42	%64	Medium	

To answer this question, the researchers calculated the mean, standard deviation, percentage, degree of toughness and total degree for each statement in the scale. Table (4) shows that the total degree of mental toughness among table tennis super league players is medium (i.e., 64%). The researchers explain such medium percentage to be the result of table tennis coaches' lack of awareness of the concept of mental toughness and its influence on players excelling in matches, and on increasing their focus, self-confidence and steadiness. The pilot study also confirmed the same results, as the players who were part of the sample indicated that their training was focused on physical and planning abilities and skills only. They did not have any knowledge of the relation between mental toughness and players' performance level during the matches. These results were also referred to by Cowden (2017)

and Kishore (2017) who said that athletes' mental toughness played a role in determining their competitive behavior and ability to handle pressure while competing.

Al-Zahrani (2020) also stated that mental toughness was essential to athletes' training and competitiveness, especially among those who wish to excel. Players who lack positive psychological properties would not, despite the physique or technical skills they have, be able to achieve high levels of performance and excellence.

Zaki (2018) explained that mental toughness helps reduce tension and relaxes the body parts, and it develops positive self-approval which is effective against psychological pressures.

To answer the second question, "What is the order of mental toughness dimensions among

table tennis players in the northern governorates in Palestine?" the researchers calculated the mean, standard deviation,

relative weight, degree of mental toughness and total degree of every dimension in the scale as shown in the following table.

Table (5) The mean, standard deviation, relative weight, degree of mental toughness and total degree of every dimension in the scale n = 60

Dimension	Mean	Standard deviation	Relative weight	Degree of toughness	Order
Self-confidence	3.26	1.31	%65.33	Medium	4
Negative energy	2.61	1.18	%52.5	Low	7
Focus control	2.75	1.18	%58.33	Low	6
Visual control	3.07	1.23	%61.67	Medium	5
Motivation	3.51	1.18	%70.17	High	1
Positive energy	3.47	1.21	%69.67	Medium	2
Attitude control	3.40	1.25	%68	Medium	3
Total	3.68	1.42	%64	Medium	

Table (5) shows:

The total percentage of the sample response was medium (64%).

- Motivation dimension ranked first at a relative weight of 70.17%.
- Positive energy dimension ranked second at a relative weight of 69.67%.
- Attitude control dimension ranked third at a relative weight of 63.67%.
- Self-confidence dimension ranked fourth at a relative weight of 65.33%.
- Visual control dimension ranked fifth at a relative weight of 61.67%.
- Focus control dimension ranked sixth at a relative weight of 58.33%.
- Negative energy dimension ranked seventh at a relative weight of 52.5%.

comprehensive training that covers both physical, mental and emotional aspects. Reducing the work on any of these aspects may lead to table tennis players' inability to excel.

This indicates that the players lack high degrees of mental toughness, and, therefore, are unable to control their psychological reflexes, unable to abandon negative thoughts and have low self-confidence.

Mental toughness plays a major role in maintaining calm and reacting correctly to incidents, which would reduce the extra unwanted moves during the match, focus the efforts, and increase positive energy so that players are effective, motivated, confident and focused (Mohammed, 2021, 14).

When coaches do not identify their players' mental toughness, this could prevent any development in the players' visualization, focus, motivation, self-confidence, psychological control and emotional stability (Mohammed, 2021, 15).

Other scholars have pointed out to the same results, explaining the importance of

Mental toughness can isolate the negative variables and help players maintain calm and stay unworried (Zaki, 2018, 300).

Based on the aforementioned, talents and physical and technical skills are not enough to achieve victory. One should have high levels of self-confidence, good focus and great motivation – all classified under the concept of mental toughness. Mental and visual abilities help increase motivation, support and self-confidence; and push away negative thinking.

All of which confirms that mental toughness helps players gain the ability to control their psychological status, rid themselves of negative thoughts, feel more secured and confident, feel more motivated and become focused on the positive aspects of sports (Al-Shibrawi, 2018, 35).

Mental toughness training allows players to stop having negative thoughts, enjoy more support, self-confidence and positive routines. It also helps them achieve their goals with good motivation, self-confidence and determination (Lee, 2011, 222).

Sham'un (2007) pointed out that any player who has mental toughness can perform steadily because mental toughness is an acquired skill that encompasses other skills such as positive thinking and problem solving.

Excelling at sports depends on the extent to which players use their mental and psychological skills so much as their physical

abilities and skills. Such psychological skills enable players to boost their energy and physical capabilities in order to achieve better performance (Ratib, 2010, 3).

Mental toughness is a sport component whose influence is more apparent on players depending on the level of competitiveness. A player's physical abilities and skills are not enough for achieving victory and distinction. Players need mental abilities, self-confidence, excellent focus under pressure in order to excel (Al-Zahrani, 2020, 1).

Mental toughness is the ability to show steady performance and self-control. It enables players to bear more in comparison with their competitors. The lack of steady performance during matches is mainly due to psychological variables, namely mental toughness (Richard, 2011, 79).

A player's technical skills or physical abilities are not enough to achieve excellence. Players need mental toughness to manage playing under pressure, concentrating, and handling different situations with high level of positivity and good performance (Al-Zahrani, 2020, 1).

Third, to answer the third question, “Are there any statistically significant differences at $\alpha \leq 0.05$ in the mental toughness degrees among the table tennis super league players based on the variables (training age, level of education and place of residence)?” the researchers used One Way ANOVA test as shown in table (6).

Table (6) Results of One-Way ANOVA test to identify the degree of mental toughness among table tennis super league players based on the variable training age, degree and residence

Variable	Source	Degree s of freedo m	Sum of squares	Mean of squares	F	P
	Between groups	2	0.645	0.322	1.346	

Training age	Within groups	57	13.49	0.239		0.268
	Total	59	14.293			
Degree	Between groups	2	0.449	0.224	0.924	0.40
	Within groups	57	13.844	0.243		
	Total	59	14.293			
Residence	Between groups	2	1.447	0.724	3.211*	0.04
	Within groups	57	12.846	0.225		
	Total	59	14.293			

* Statistically significant at $\alpha \leq 0.05$

Upon the One-Way ANOVA analysis, the research results showed that there are no statistically significant differences at $\alpha \leq 0.05$ regarding the degree of mental toughness among table tennis super league players based on the variables of age and educational degree. The researchers explain such result for the approximate age and educational degree among the players; which agrees with other studies that pointed to the similarities between age and education among players.

Table (6) shows, however, statistically significant differences at $\alpha \leq 0.05$ regarding the degree of mental toughness among table tennis super league players based on the variable of residence. In order to determine which place of residence shows the statistically significant differences, the researchers used LSD Post Hoc Test as shown in table (7).

Table (7) LSD test results for post hoc between the means of the residence levels in the mental toughness degree identification for table tennis super league players

Residence	Mean	Residence		
		Camp	Village	City
Camp	2.89		-0.148	-0.423
Village	3.04	0.148		-0.274*
City	3.31	0.423	0.274*	

Table (7) shows statistically significant differences in mental toughness degrees among

table tennis super league players based on the variable of residence and in favor of players

who live in cities over players who live in camps or villages. The researchers explain such results as being due to the long distance between the players' residence and training location, and difficulty to move across the cities.

Conclusions

Results showed that:

1. The total degree of mental toughness among table tennis super league players was medium at 64%.
2. There are no statistically significant differences at $\alpha \leq 0.05$ regarding the degree of mental toughness among table tennis super league players with reference to the training age and level of education variables.
3. There are statistically significant differences at $\alpha \leq 0.05$ regarding the degree of mental toughness among table tennis super league players with reference to the residence variable in favor of players who live in cities.

Recommendations

1. This study provides important information and data for Palestine Athletes Federation about the players' degree of mental toughness.
2. Palestine Table Tennis Federation should hold educational and training courses for coaches and players, especially on mental toughness.
3. More studies should be conducted to identify the influence of mental toughness training on the performance of table tennis players.
4. The mental toughness scale should be used to identify its degree among other players in different sports.
5. Players should be trained on having self-confidence, controlling their energy and focusing more since this influence one's mental toughness.

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