

A COMPARATIVE STUDY OF PERCEIVED STRESS OF MALE AND FEMALE JUDOKA

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ABSTRACT

The purpose of the study was to compare Perceived Stress of Male and Female Judokas.480 judokas (245 women, 235 men) was selected randomly during the Senior National Judo Championship held at Vishakhapatnam (A.P) in 2019 and All India Inter University Judo Tournament held at Punjab University Chandigarh in 2018 and Guru Nanak Dev University Amritsar in 2018. The age of the subjects were ranged from 16 to 37 years. The Perceived Stress Scale (PSS) (Cohen et al., 1983) is used as an instrument for measuring the stress of judokas. Mean, Standard Deviation and t-ratio measured to analyze the data and level of significance was set at 0.05. The results indicated male and female judoka did not differ significantly on perceived stress.

Keywords: Perceived stress, Judokas, Male, Female, Championship

1. INTRODUCTION

Stress is an integral part of our lives. "It is a natural byproduct of all our activities". Life is a dynamic process and thus forever changing and stressful. Stress can be defined as a physical, mental or emotional demand, which tends to disturb the homeostasis of the body.

Stress has been identified as crucial in sport, influencing performance as well as social functioning (Jones & Hardy, 1990).

Physical activity and physical exercise are beneficial most of the time; it can also be seen as a "stress factor" in men and women sports performance. In general physical stress can be classified as acute or chronic, and stress hormones can be used to assess the metabolic alterations caused by exercise [Mastorakos et al. 2005]

Sports performance is not simply a product of physiological (for example stress and fitness) and biomechanical (for example technique factors) but psychological factors also play a crucial role in determining performance. However, every athlete has a certain stress level that is needed to optimize his or her game. That bar depends on factors such as past experiences, coping responses and genetics. Research has shown that physical activity is an effective means of reducing anxiety and various indices of stress among adults (Bhui, 2002; Dunn, Trivedi, & O'Neal, 2001).

Stress as a process which containing four stages. First, the individual and placed a demand that can be physical or psychological, second stage is the perception regarding to the demand which is different for each individual. Third step is response occurs as demand lodged and the last stage is behavior of individual the stress caused by this process [Weinberg and Gould 2001].

By studying stress in the context of combat sports, Belem et al. (2016) point that lesion can be a factor causing stress because as a result of the lesion, the athlete has to stop attending to the training and competitions, which leads to income loss and career interruption. The mean values of overall scores on the stress scale and its subscales were higher for women than for men. However, due to the size of the sample group, there is insignificant difference (Morga et al. 2015)

Lazarus and Folkman (1984) provide a transactional cognitive component to stress with their concept of appraisal, which indicates that individuals only perceive stress when a challenge or event is both threatening and of such a nature that the individual is unable to cope.

Greater perceived stress was associated with diminished life satisfaction for athletes with a major injury more than for those with a minor injury. The interaction between perceived stress and perceived social support was associated most with diminished life satisfaction for participants with a major injury. (Malinauskas and Romualdas 2010)

2. METHODOLOGY

2.1 Selection of Subjects

To serve the purpose (Comparative Study of Perceived Stress of Male and Female Judoka) of the investigation, 480 judokas (245 women, 235 men) was selected randomly during the Senior National Judo Championship held at Vishakhapatnam (A.P) in 2019 and All India Inter University Judo Tournament held at Punjab University Chandigarh in 2018 and Guru Nanak Dev University Amritsar in 2018.

2.2 Administration of Questionnaire

To measure the stress The Perceived Stress Scale (PSS) (Cohen et al., 1983) was used. It is a measure of the degree to which situations in one's life are appraised as stressful. A likert scale lets respondents rate their reaction to a statement with 0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often. Its scores are obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) to the four positively stated items (items 4, 5, 7, & 8) and then

summing across all scale items. A short 4 item scale can be made from questions 2, 4, 5 and 10 of the PSS 10 item scale. Scores around 13 are considered average. Scores of 20 or higher are considered high stress, and if you are in this range. All the subjects had answered the questionnaire separately, without consulting others. The subjects were exhorted to give their frank and true opinion and the research scholar had assured the respondents that the information given by them would be kept confidential and utilized for the research purpose only.

3. RESULTS

To find out the significance of differences between means of perceived stress among Indian male and female judokas, mean, SD, and T ratio was computed. The result of the study is presented with the help of following table and graph.

TABLE - 1
DESCRIPTIVE ANALYSIS AND SIGNIFICANCE OF DIFFERENCE BETWEEN MALE AND FEMALE JUDOKAS ON PERCEIVED STRESS

VARIABLES	GENDER	MEAN	Σ_M	SD	MD	Σ_{DM}	DF	T-RATIO
PERCEIVED SRESS	MALE	19.6383	.33606	5.15166	.02293	.50977	478	.045**
	FEMALE	19.6612	.38124	5.96743				

**Insignificant at .05 level

,t .05 (478) = 1.960

The data on perceived stress in table -1 revealed that male and female judokas have equal mean, when compare with norms of scale have moderate level of stress [14 to 26 (moderate level of stress)]. Table 1 depicts that the computed value of t- ratio (.045) is lesser than the tabulated value of t- ratio (1.960). That means there is no significant difference between male and female judokas.

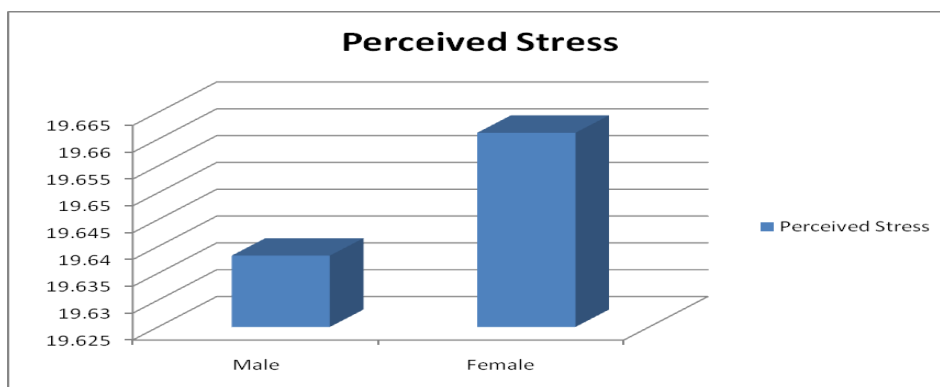


Figure 1:Mean score of perceived stress of Indian male and female judokas.

4. DISCUSSION

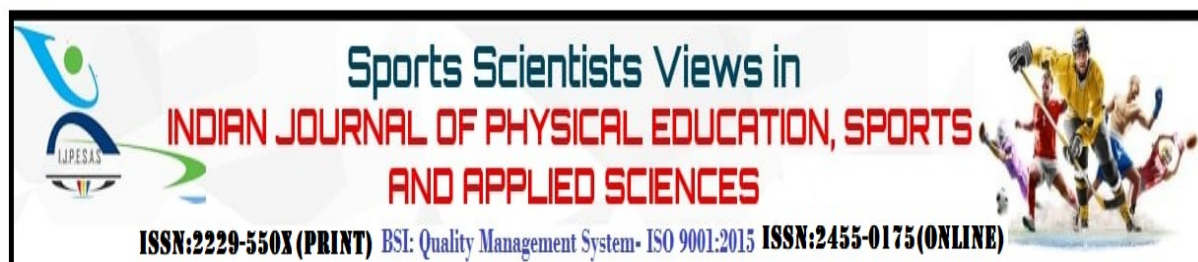
The result of descriptive analysis indicated that male and female judokas have equal mean score on perceived stress. The data on perceived stress indicate statistically insignificant difference between male and female judokas. It might be due to that they both group have similar type of activity. Also all the subjects are selected from the higher level of competitions like: Senior National, All India Inter University and if the subjects will be select from another level of competition, may be result differs.

5. CONCLUSION

The result of the study concluded that Male and female judokas have moderate level of stress.

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A COMPARATIVE STUDY OF MENTAL TOUGHNESS OF MEDALIST AND NON-MEDALIST JUDOKAS

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ABSTRACT

The purpose of the study was to compare Mental Toughness of Male and Female (Medalist and Non-Medalist)Judokas. Sixty six Male Judokas (33 medalist, 33 non- medalist) and Forty four Female Judokas (21 medalist, 21 non-medalist) was selected randomly during the Senior National Judo Championship held at Vishakhapatnam (A.P) in 2019 and All India Inter University Judo Tournament held at Punjab University Chandigarh in 2018 and Guru Nanak Dev University Amritsar in 2018. The age of the subjects were ranged from 16 to 37 years. Sports Mental Toughness Questionnaire(Sheard et al. 2009) was used as an instrument for measuring the Mental Toughness of Judokas. The statistical technique applied in order to examine the hypothesis (There is no significant difference between male medalist and non-medalist judoka and no significance difference between female medalist and female non-medalist judoka) of the study was Descriptive statistics such as Mean and Standard Deviation and t ratio measured to analyzed the dataand level of significance was set at 0.05. The results indicated insignificant difference between male medalist and non-medalist judoka on confidence, control sub factor of mental toughness. Where as in case of constancy another sub factor the difference was significant. The female medalist and non-medalist judokas did not differ significantly on any of the sub factors of mental toughness.

Keywords: Mental Toughness, Medalist, Non-Medalist, Judokas.

1.INTRODUCTION

Mental toughness allows athletes to perform at their full potential under pressure, while also remaining calm and being able to bounce back from obstacles and mistakes. Mental toughness is often defined as one of the most important psychological characteristics that support the success of athletes (Cowden R. 2017).

Mental Toughness can be described as providing the link between peak performance and stress management, because you can't operate to the best of your abilities unless you deal effectively with stressors and challenge.

Mental toughness is when you, your body, the competition, nature, or the environment has the best of you so that you're physically tapped out and need to figure out how to pull something out of yourself not in a robotic way—in a way that's mentally aware and engaged. It's not just the ability to keep moving but to keep doing it in a way that's engaged and competitive in the environment you're in, whether that's competing against the clock or other human beings. It's easy when you feel good physically. It's when that physicality leaves you. I think of mental toughness as your ability to deal with pain and to process it. It's your body's ability and your mind's ability—mostly your mind's. Mental toughness could be the ability to get out of your body what your body is capable of that day.

Mental toughness is a factor that helps individuals pull through difficult situations and successfully overcome threatening conditions (Jomhari, 2002 as cited in Rostami and Mohammadi (2015). In elite sports competitions where high performance exists, there are not many factors as important as mental toughness in achieving competitive advantage and success. (Gucciard 2017).

At the beginning judo was learnt as a self-defence martial arts technique. So it is quite clear that most of its actions are to hurt other person, but after that, suitable modifications were made so then after students can learn this art without hurting another person. The individual who practices judo is called Judoka. The main goal of a judo player is to throw his opponent to the ground in such a way as to make them land on their back and immobilize him through locking body's joint parts or by choking him.

In this context, especially in martial sports, the concept of mental toughness is important because athletes are required higher level of competition and physical contact (Chen et al. 2013,Bojanic 2019). Judo sport is seen as a martial sport with high popular- 996 OnurMutluYasar, Murat Turgutity and difficulty in the world. In this context, it is important that elite judo athletes have high mental toughness (Cadenas 2016).

2. METHODOLOGY

2.1 Selection of Subjects

To serve the purpose (compare mental toughness of medalist and non-medalist judokas) of the investigation, 66 Male Judokas (33 medalist, 33 non- medalist) and 42 Female Judokas (21 medalist, 21 non-medalist)who obtained 1stthree positions in Senior National Judo Championship held at Vishakhapatnam (A.P) in 2019 and All India Inter University Judo Tournament held at Punjab University Chandigarh in 2018 and Guru Nanak Dev University Amritsar in 2018 were the subjects of the study.

2.2 Hypothesis

There is no significant difference between male medalist and non-medalist judoka and no significance difference between female medalist and non-medalist judoka

2.3 Questionnaire

The Sports Mental Toughness Questionnaire (Sheard et al. 2009) was used to measure Mental Toughness. This 14-item scale (SMTQ) provides a total Mental Toughness score and three subscales scores: confidence, constancy and control. Participants rated the items on a four point Likert scale anchored by 1: not at all true, 2: a little true, 3: mostly true and 4: very true. Higher combined subscale scores reflect higher levels of each dimension and higher scores a single combined score reflects higher global mental toughness of subject.

3. RESULT

To find out the significance of differences between means of mental toughness and its sub factors among medalist and non-medalist judokas, mean, SD, and t- ratio was computed. The result of the study is presented with the help of following table and graph.

TABLE - 1
DESCRIPTIVE ANALYSIS AND SIGNIFICANCE OF DIFFERENCE BETWEEN
MALE MEDALIST AND NON MEDALIST JUDOKAS ON MENTAL TOUGHNESS
AND ITS FACTORS

Achievement		Mean	$\hat{\sigma}_m$	SD	MD	$\hat{\sigma}_{Dm}$	Df	t- ratio
Confidence	Medalist	17.8182	.79945	4.59248	1.64	1.18	64	1.392**
	Non Medalist	16.1818	.86214	4.95262				
Constancy	Medalist	10.5152	.42667	2.45104	1.55	.57	64	2.727*
	Non Medalist	8.9697	.37306	2.14308				
Control	Medalist	10.6970	.52492	3.01543	.64	.74	64	.864**
	Non Medalist	10.0606	.51665	2.96795				
Mental Toughness	Medalist	39.1515	1.41496	8.12835	3.91	2.03	64	1.924**
	Non Medalist	35.2424	1.45841	8.37791				

*Significant at .05 level,
t .05 (64) = 1.96

The analysis of data in table - 1 shows that confidence, constancy and control sub factors of mental toughness indicate male medalist judoka's (confidence and constancy) means are higher than non- medalist judokas and male medalist judoka's (control) mean are equal to non-medalist judokas. In overall mental toughness male medalist judokas scoring higher than non-medalist judokas. Table 1 depicts that (2.727 for Constancy) greater than the tabulated value of t-ratio (1.960) that means there is significance difference between male medalist and non-medalist judokas. The computed value of t- ratio (1.392 for confidence; .864 for control; 1.924 for total mental toughness) is lesser than the tabulated value of t- ratio (1.96). That means there is no significant difference between male medalist and non-medalist judokas.

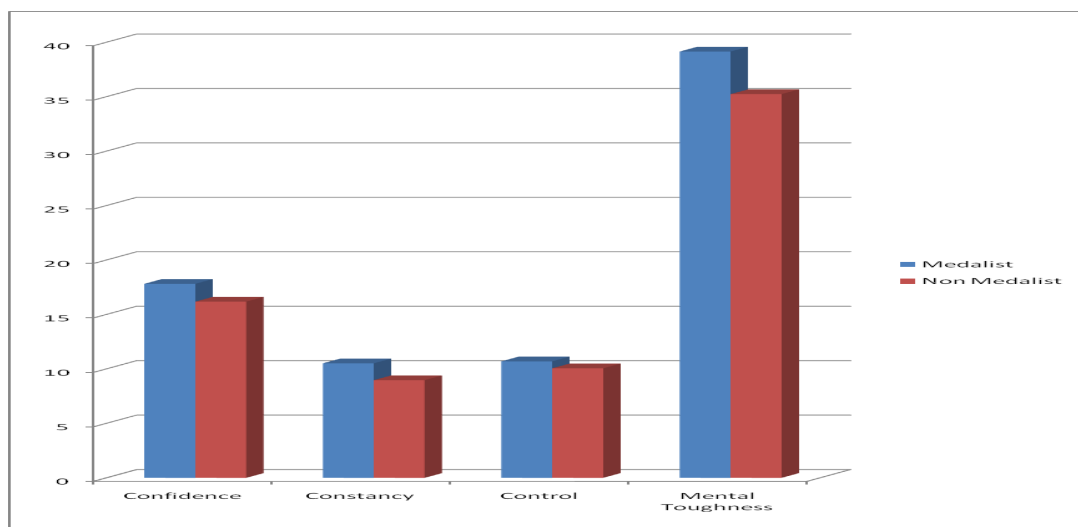


Figure 1: Mean score of Mental Toughness of Male Medalist and Non-Medalist Judokas.

TABLE - 2
DESCRIPTIVE ANALYSIS AND SIGNIFICANCE OF DIFFERENCE BETWEEN FEMALE MEDALIST ANDNON MEDALIST JUDOKAS ON MENTAL TOUGHNESS AND ITS FACTORS

Variables	Achievement	Mean	σ_m	SD	MD	σ_{Dm}	Df	t- ratio
Confidence	Medalist	16.9048	.76813	3.52001	.67	1.04	40	.640**
	Non Medalist	16.2381	.70341	3.22343				
Constancy	Medalist	10.2857	.47380	2.17124	.67	.69	40	.968**
	Non Medalist	10.9524	.49989	2.29077				
Control	Medalist	11.4286	.55020	2.52134	.10	.85	40	.122**
	Non Medalist	11.3333	.64856	2.97209				
Mental Toughness	Medalist	38.6190	1.24876	5.72255	.24	1.96	40	.112**
	Non Medalist	38.3810	1.50472	6.89548				

**Insignificant at .05 level,

t .05 (64) = 1.96

The analysis of data in table – 2 shows that confidence, constancy and controls sub factors of mental toughness indicate female medalist judokas scoring equal to female non-medalist judokas Table - 2 also depicts that the computed value of t- ratio (.640 for confidence; -.968 for constancy; .122 for control; .122 for total mental toughness) is lesser than the tabulated value of t- ratio (1.96). That means there is no significant difference between female medalist and non-medalist judokas.

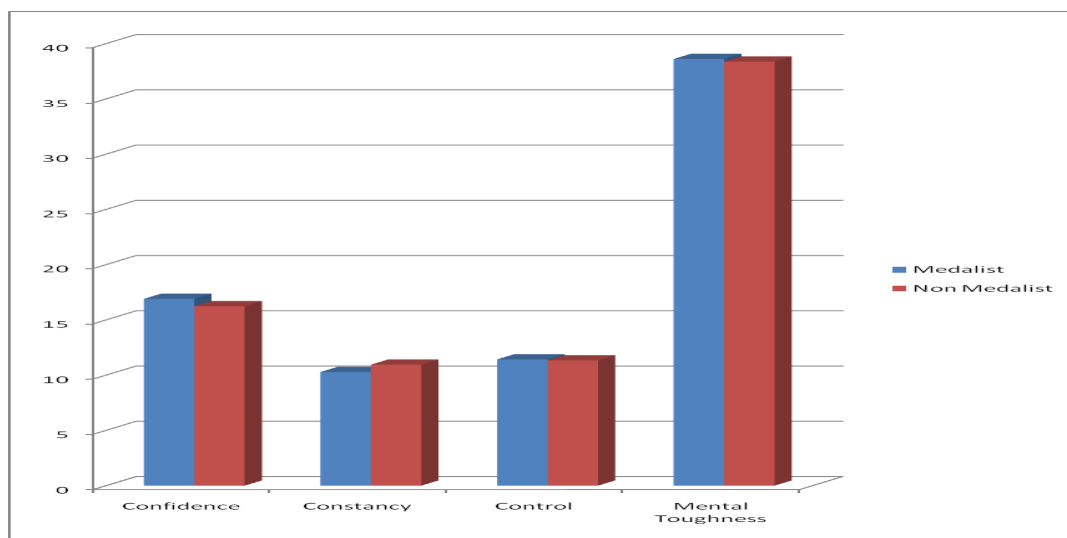


Figure 2: Mean score of Mental Toughness of Female Medalist and Non-Medalist judokas.

4. DISCUSSION

The result of descriptive analysis indicated that male medalist judoka's (confidence and constancy) means are higher than male non-medalist judokas and male medalist judoka's (control) mean are equal to male non-medalist judokas. In overall mental toughness male medalist judokas scoring higher than male non-medalist judokas. T-Ratio indicated that there is no significant difference between male medalist and non-medalist judoka in the dimension of confidence, control and total mental toughness. But in the dimension of constancy, there is significant difference between male medalist and non-medalist judoka.

In overall mental toughness and its subscale female medalist judokas scoring equal to female non-medalist judokas. Perhaps it is because systematic preparation and appropriate training scheduled prior to competition may improve ability to handle pressure, confidence and ability to control emotion. As well as there is no significant difference between female medalist and non-medalist judoka in all dimension. Though Antony and Antony (2016) findings support that mental toughness is a desired attribute which differentiates a medalist from a non-medalist player. Gould et al. (2002), Connaughton et al. (2007) had stated that elite competitive athletes possessed better mental toughness.

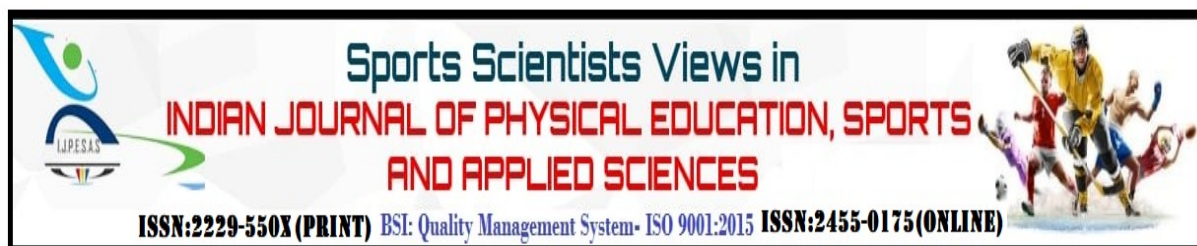
5. CONCLUSION

Male medalist have high confidence and constancy with greater mental toughness as compare to the non-medalist. However, both exhibit somewhat equal control. When scores were compared female medalist and non-medalist judokas have equal level of confidence, constancy and control and they both are equally mentally tough.

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A CORRELATIONAL STUDY BETWEEN EMOTIONAL INTELLIGENCE AND PROBLEM SOLVING ABILITY AMONG BADMINTON PLAYERS

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ABSTRACT

The purpose of the study was to assess the correlation between emotional intelligence and problem solving ability of badminton players. To conduct the study 100 male badminton players and 100 female badminton players were selected as a sample. The criterion for the selection of badminton players was set to minimum participation in intercollegiate badminton events. The purposive sampling method was used for the selection of subjects. To assess problem solving ability of selected badminton players, Problem Solving Ability Scale prepared by Sharmila and Naga Subramani (2011) was used. This scale consists of 40 statements based on 5 point scale i.e. always, often, sometimes, rarely, and never respectively. Numerical weightage of 4, 3, 2, 1 and 0 are assigned as per the response. This scale is highly reliable and valid. To measure emotional intelligence, five dimensional sports emotional intelligence test prepared by Agashe and Helode (2008) was adopted. This Hindi Inventory comprises of in all 15 items in which 3 items each for tapping self-awareness, self-regulation, self-motivation, empathy and social skills respectively. The test-retest reliability coefficient of this inventory is 0.71, which is statistically significant and denotes very high level of reliability of the inventory scores through “stability” indices. Pearson correlation coefficient 'r' was computed and a moderate level of positive association was observed between emotional intelligence of badminton players with their problem solving ability. It was concluded that emotional intelligence and problem solving skills of badminton players are embedded in each other and facilitates each other.

Keywords : Problem solving skills, emotional intelligence, badminton

1. INTRODUCTION

The role of emotional intelligence and problem solving skills are extensively documented under the domain of sports psychology. Emotional intelligence can be used as problem solving strategy. Problem arising out of personal grudge or success of fellow teammate can sometimes upset you and you can be jealous. In this situation it is essential to identify emotions and judge whether you are really jealous with other success or it is just because of frustration of not achieving the similar milestone. It is also necessary to use varied emotions to think rationally about the problems and pinpoint the obstacles that is preventing from attaining desired goals. Similarly understanding controlling emotions actually help us to think more productively while dealing with a problem. There are instances where problem solving is dependent on emotions. Problem solving also encompass ability to know about the emotions that affect our decision making process. It is opined that person with high level of emotional intelligence approach much more efficient, effective and controlled approach to solve the problems. A person high in emotional intelligence are well adjusted to the environment and able to assess the situation in fairness while keeping their emotions in check.

Researches and experiments conducted in the 90s onwards have tried to challenge such over-dominance of the intelligence and its measure intelligent quotient (I.Q.), by replacing it with the concept of emotional intelligence and its measure, emotional quotient (E.Q.). These have revealed that a person's emotional intelligence measured through his E.Q. may be a greater predictor of success than his or her I.Q. Goleman and his colleagues have suggested that EI is 'a convenient phrase with which it is easier to focus attention on human talent. Even though it is a simple phrase, it incorporates the complexity of a person's capability'. Based on extensive research Goleman (1995, 1998) has proposed five dimensions of EI consisting of 25 competencies namely, self awareness, self regulation, self motivation, empathy and social skills.

Some landmarks studies on emotional intelligence shows its importance for performance enhancement in sports. Laborde et al. (2001), Lane et al. (2009), Soleimani et al. (2013) and Arribas-Galarraga et al. (2020) reported a strong relationship between emotional intelligence with sports performance. Similarly the cognitive aspect of sports performance has also been highlighted by researchers namely Volkamer, 2009, Hristovski (2012), Agashe and Shambharkar (2014) in which they putforth the useful link between problem solving ability with emotional intelligence.

Despite extensive research no such study has been conducted on badminton players in this regard. The very nature of badminton requires emotional intelligence and problem solving ability, so the present study was planned to investigate the correlation between emotional intelligence and problem solving ability of badminton players.

1.1 Objectives

The objective of the present study is to explore the possible association between emotional intelligence and problem solving skills in badminton players.

1.22 Hypothesis

It was hypothesized that the emotional intelligence will be strongly correlated with the problem solving ability of badminton players.

2. METHODOLOGY

The following methodological steps were taken to conduct the present study.

2.1 Sample:-

To conduct the study 100 male badminton players and 100 female badminton players were selected as a sample. The criterion for the selection of badminton players was set to

minimum participation in intercollegiate badminton events. The average age of the sample was 23.14 years. The purposive sampling method was used for the selection of subjects.

2.2 Tools:

Problem Solving Ability Scale: To assess problem solving ability of selected badminton players, Problem Solving Ability Scale prepared by Sharmila and Naga Subramani (2011) was used. This scale consists of 40 statements based on 5 point scale i.e. always, often, sometimes, rarely, and never respectively. Numerical weightage of 4, 3, 2, 1 and 0 is assigned as per the response. This scale is highly reliable and valid.

Sports Emotional Intelligence Test : To measure emotional intelligence, five dimensional sports emotional intelligence test prepared by Agashe and Helode (2008) was adopted. This Hindi Inventory comprises of in all 15 items in which 3 items each for tapping self-awareness, self-regulation, self-motivation, empathy and social skills respectively. The test-retest reliability coefficient of this inventory is 0.71, which is statistically significant and denotes very high level of reliability of the inventory scores through “stability” indices.

2.3 Procedure:

The selected badminton players were subjected to sports emotional intelligence test and problem solving scale. The response was converted into scores and tabulated in respective groups. Pearson correlation was calculated and depicted in the form of tables.

3. RESULTS

TABLE 1
CORRELATION MATRIX FOR VALUE OF PEARSON CORRELATION 'R'
BETWEEN EMOTIONAL INTELLIGENCE AND PROBLEM SOLVING
ABILITY (N=200) OF BADMINTON PLAYERS

ABILITY OF MALE BADMINTON PLAYERS	Emotional Intelligence	Problem Solving Ability
Emotional Intelligence	1	.570, p<.01
Problem Solving Ability	.570, p<.01	1

In this study it was investigated that whether emotional intelligence and problem solving ability of 200 badminton players are correlated and the Pearson 'r' depicted that emotional intelligence (EI) and problem solving ability were moderately and positively correlated. The $r(df=198) = 0.570, p<.01$ support this as calculated 'r' value is greater than the table value for $df(N-2) = 198$ at .01 level i.e. 0.181.

TABLE 2
CORRELATION MATRIX FOR VALUE OF PEARSON CORRELATION 'R'
BETWEEN EMOTIONAL INTELLIGENCE AND PROBLEM SOLVING

ABILITY OF MALE BADMINTON PLAYERS	Emotional Intelligence	Problem Solving Ability
Emotional Intelligence	1	.505, p<.01
Problem Solving Ability	.505, p<.01	1

In this study it was investigated that whether emotional intelligence and problem solving ability of 100 male badminton players are correlated and the Pearson 'r' depicted that emotional intelligence (EI) and problem solving ability were moderately and positively correlated. The $r(df=98) = 0.505, p<.01$ support this as calculated 'r' value is greater than the table value for $df(N-2) = 98$ at .01 level i.e. 0.254.

TABLE 3
CORRELATION MATRIX FOR VALUE OF PEARSON CORRELATION 'R'
BETWEEN EMOTIONAL INTELLIGENCE AND PROBLEM SOLVING
ABILITY (N=100) OF FEMALE BADMINTON PLAYERS

ABILITY OF MALE BADMINTON PLAYERS	Emotional Intelligence	Problem Solving Ability
Emotional Intelligence	1	.604, p<.01
Problem Solving Ability	.604, p<.01	1

In this study it was investigated that whether emotional intelligence and problem solving ability of 100 female badminton players are correlated and the Pearson 'r' depicted that emotional intelligence (EI) and problem solving ability were moderately and positively correlated. The $r(df=98) = 0.604, p<.01$ support this as calculated 'r' value is greater than the table value for $df(N-2) = 98$ at .01 level i.e. 0.254.

4. DISCUSSION

Result reveal significant and positive correlation between emotional intelligence and problem solving ability of badminton players. It indicate that problem solving ability is emotion specific and one need to control and manage their emotions effectively so that they put their energy and focus to solve the problem.

5. CONCLUSION

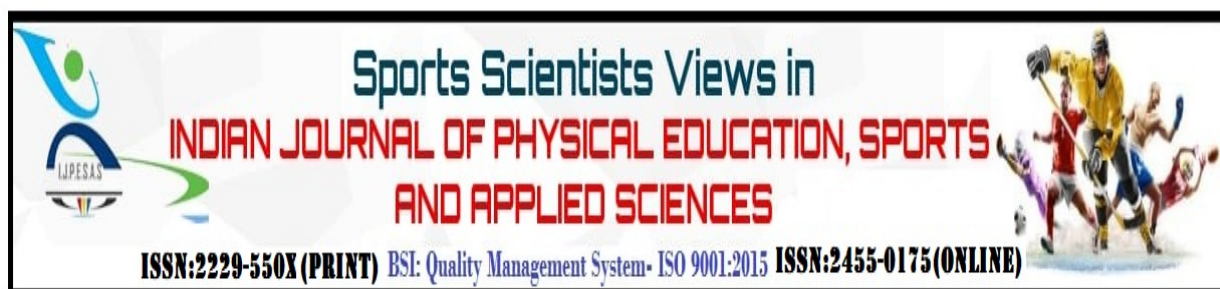
Based on the results, it may be concluded that that emotional intelligence and problem solving skills are embeded in each other and facilitates each other, hence emotional intelligence and problem solving skills of badminton players needs detailed evaluation so as to facilitate their performance by incorporating both emotional and cognitive aspect as their psychological characteristics.

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EFFECT OF YOGA ON SELF CONCEPT OF MALE STUDENTS OF HALIM MUSLIM P.G. COLLEGE, KANPUR U.P. INDIA

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ABSTRACT

The word Yoga means 'Union'. This word is derived from Sanskrit 'Yuja' which means 'to unite'. Actually, Yoga is a way of life which unites first our mind with our body and then unites us with the nature of God or Super cosmic power. Mental health refers to the overall well-being of an individual. It is about the balance of the Physical, Social, Emotional and Spiritual aspects of life. According to the World Health Organization (WHO), mental health is “a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community” Mental health refers to cognitive, behavioral, and emotional well-being. It is all about how people think, feel, and behave. People sometimes use the term “mental health” to mean the absence of a mental disorder. Mental health can affect daily living, relationships, and physical health. However, Factors in people's lives, interpersonal connections, and physical factors can all contribute to mental health disruptions.

Key Words: Mental Health, Self concept and Yoga

1. INTRODUCTION

yoga is best know for its poses or Asanas. These reach deep into the yogi's body, massaging important internal organs. Asanas help cleanse and maintain the nervous and circulatory systems, which automatically result in a healthier body and mind. Breathing Exercises or Pranayama can also help in keeping a person healthy by supplying a fixed amount of oxygen to the muscles and internal organs.

Self-concept is the sum total of the ways in which the individual sees himself or herself. Self-concept is often considered to have two major dimensions a descriptive component, known as the self-image, and an evaluative component, known as self-esteem, although in practice the term is more commonly used to refer to the evaluative side of self-perception.

Self-concept is a person's sense of identity, the set of beliefs about what he or she is like as an individual. Cognitions about identity comprise self-schema an organized body of information that relates to a person's self, pertaining to specific domains, such as dependence or femininity. In addition to self-schemas, part of the self is comprised of possible selves, those aspects of self that relate to the future. In addition, the concept of identity reflects roles and group categories to which a person belongs, along with the set of personal meanings and experiences related to the roles and categories.

Self-concept has been referred by **Lowe (1961)** as one's attitude towards self, and by **Pederson (1965)** as an organized configuration, of perceptions, beliefs, feelings, attitudes and values which the individual views as a part of characteristics of him.

Rogers (1959) defined self concept as the organized, consistent conceptual gestalt composed of perceptions the characteristics of the "I" or "me" and the perceptions of the relationships of the "I" or "me" to others and to various aspects of life, together with the values attached to these perceptions. It is a gestalt which is available to awareness though not necessarily in awareness. It is a fluid and changing gestalt, a process but at any given moment it is a specific entity.

Objective of the study was to assess the effect of yogic training on Self Concept of the students.

2. METHODOLOGY

2.1 Selection of Subjects

40 Male students were selected of Halim Muslim P.G. College, Kanpur for this study. 20 students for Experimental group and 20 for controlled group students. Age was between 20 to 25 years. A yoga module consisting of Yoga Asanas, Pranayama and Meditation, 30 minutes of yoga training given daily for six weeks. For the both groups pre and post tests conducted. Self concept test was used to analyze the data.

2.2 Tools

Self Concept scale used to asses the data. This scale developed by Dr. Raj Kumar Saraswat.

2.3 Variables

1. Independent variable – (Controlled & Experimental groups)
2. Dependant variable –
 - (I) . Self Concept
 - (II) Yoga

3. RESULTS

TABLE I

Self Concept	Pre test of Controlled group		Post test of Controlled group		DF	't'
	Mean	SD	Mean	SD		
	123.25	10.39	117.19	6.77		

Table No. I Pre-test controlled group of students and post-test controlled group of students both the groups difference between the two mean is no difference between the mean ($t'=0.78,df=18$) of self concept.

TABLE 2

Self Concept	Pre test of Experimental group		Post test of Experimental group		DF	't'
	Mean	SD	Mean	SD		
	96.55	14.47	133.68	17.92		

Table No. 2 Pre-test of Experimental group of students and post-test experimental group of students the difference between the two mean is highly significant ($t'= 6.78,df=18$) of self concept.

4. DISCUSSION

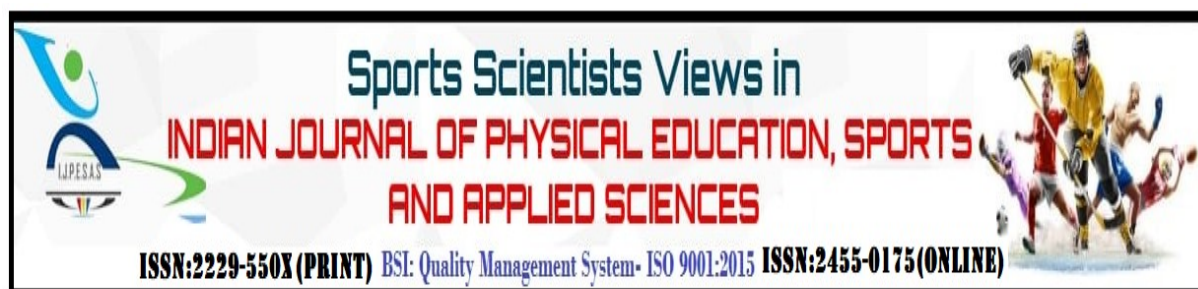
Yogic exercises promote the good health, physical fitness and self concept of the students. Yogic exercise must be included in the college curriculum to development the Physical and Psychological aspect of the students.

5. CONCLUSION

Positive effect of yogic exercise was shown on self concept of the students. Yogic exercise can improve the self concept in experimental group.

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IMPACT OF CONTEMPORARY TECHNOLOGIES ON SPORTS

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ABSTRACT

In the early stage computer science and informatics technology were used for the biomechanical analysis of human traits, various kind of forces implementation, assessing the C.G. etc, the coaches and sports experts started analyzing of sports technique and game patterns by the help of recorded, collected and interpreted the value and features of the movements. Over the past century, computer technology has affected the athletes as well as officials in various sports. So, modified the way sports to prepare for playing in sports which should be reviewed by officials. Computer Technology is used most of sports scientists involved in a current sporting event. If look back in the past depth of the history of these discipline. The involvement of computer science & informatics in 1960, initially it was used for the collection of sports data, records and literature, gradually, in 1970 with great changes database was developed.

Nowadays, nobody can assume any field without computer science, it helps individual to make faster and precise, positive in sports, it has changes the complete scenario of sports. Sports science and computer science is an inter-disciplinary section but both have similar objectives and goal, in combines form the theoretical and practical aspects. Therefore, computer and sports sciences work as a mutual associate, as sports science associated with the form of use of data, media, models, analysis, historical data and technique patterns. Computer is a prevalent and pioneer gift in modern era. Its changes the human life style and working capacity, Computer science has involvement in every field whether it is agriculture, medical, research, business, education, administration, industry, business and sports.

Key word: Technology, Computer, Technique, Biomechanical Analysis, iso- kinetic etc

1. INTRODUCTION

Computer is a prevalent and pioneer gift in modern era. Its changes the human life style and working capacity, Computer science has involvement in every field whether it is agriculture, medical, research, business, education, administration, industry, business and sports.

Nowadays, nobody can assume any field without computer science, which provide help to an individual to them make faster and precise, positive in sports (1), it has changes the complete scenario of sports. The computer science is an inter-disciplinary branch of sports sciences but both have similar objectives and goal, in combines form the theoretical and practical aspects. Therefore, computer and sports sciences work as a mutual associate, as sports science associated with the form of use of data, media, models, analysis, historical data and technique patterns (2).

If look back in the past depth of the history of these discipline. The involvement of computer science & informatics in 1960, initially it was used for the collection of sports data, records and literature, gradually, in 1970 with great changes database was developed, where the beneficiary may create and stored there documentation, information, records, publication, articles, books etc. after this decades with the time being, first organization namely IASI (International Association For Sports Information) was established (3). Establishment of the organization reveals the importance of computer application in sports. With the progression of computer application and the innovation of more powerful hardware and software the real contribution of computer science begun in sports (4).

In the early stage computer science and informatics technology were used for the biomechanical analysis of human traits, various kind of forces implementation, assessing the C.G. etc, the coaches and sports experts started analyzing of sports technique and game patterns by the help of recorded, collected and interpreted the value and features of the movements (5).

The consequence of the interchangeable efforts of these disciplines the term computer science and sports were added in encyclopedia of sports science in year 2004.

After tracing a brief history of the computer in sports, a article consider particular area of application covering sports research, competitive sports, sports and recreation, management, education of sports and the sports and leisure industry.

The concept of sports always is an undergoing progress, in the western society, for example a modern sport is deeply connected to the market and to moving towards the commercialization and globalization. Because of expansion of technology, the characteristics of the expectations might have practically. In this view, the *guttmainian* analysis of E- sports and its development leads to their scenario (6).

The computer science technology in sports field can build a considerable contribution, the function that technology play in our lives by carefully considering the benefits and liabilities of newer technologies. The worth of sports in human life is very significant, influence worldwide to bring harmony with each nation.

Creating revolutionizes into a sport, through the insertion of new technologies and equipments caused a controversy. One a side expert have views that the use of the technologies in the sports make the game slow and on the other hand have dissimilarity in the views, technologies makes sports more pleasurable while watching the correct decisions are made due to it. Some experts have opinion that if any accurate and precise technologies are accessible that it would be employed so that the actual decisions can be made. If a new technology is available, and shown to be accurate, then it should be used so that the correct decisions can be made. It is better for the athletes as well as for the teams also(6).

2. MATERIALS

There are some aspects, where computer sciences have distinct function. The role of Computer science in sports and sports performance, Training and coaching, Sports Biomechanics, Sports equipment and technology, Computer provided the extra applications in sports, Multimedia, Storing video & watching, Data Analysis developing equipment, Training and health, reduce human error, Scouting Development in equipment for special people.

2.1 Storing statistical data

Indeed historical data and records very helpful for the improvement for any discipline, while reading and reviewing the historical data, however the statistics have miracle of the world. It's give the meaning to the raw data or numbers, while analyzing the data with the help of statistical analysis it provide the hidden valuable information to the sports expert and coaches. Stored data help the coaches and experts to know the how the athletes will perform the in various situations, it's not only confined upto athletes but too grounds and teams also. Computers/ CD/floppy/ are used in sports to accumulate and keep path of such data. Manager/ coaches take help from computer to generate a spreadsheet database for store all the stats regarding the team and opponents. Media and various web pages may also use the same. While script and publishing the inside stories concerning to the performance of athlete and teams (7).

2.2 Watching and storing video

It is magic stick to coaches and players, while watching the videos of techniques or movements, they may use it for learning of technique, also understand and read the opponents movements in term of technique and tactics of the game. For example in judo, judoka are master of one or two techniques but to score easily they used to perform combination of techniques, with this each player have their particular style of play. It is difficult to analysis the opponents techniques, style and reaction along with weak point of the opponents. Similarly, in cricket batsman always trying to see the grip of the bowler, which helps the batsman to understand the behavior of the ball, in kabaddi also each player have their own style to attack and defense, some players used to slow the game and some trying to play in fast movement.

2.3 Developing Equipment

While helping the computer science, sports changes entirely, make it faster, safer, advance and more pleasant. In sports development industries because of computer there are huge improvement in safety. In the present athletes have many light weight, advance, burly and attractive equipments, but also have more protective and easy to useable. Sports equipment producer have developed gadgets to minimize the chance of injuries on athletes, developed equipment for particular devices i.e. iso-kinetic machine, separate devices for particular muscles etc, its covers all the aspects area like clothes, shoes, instrument for referee, score display many more. For instance, cricket leg pad, helmet in cricket, cycle racing helmet, sin guard, bats etc. all theses equipments designs have biomechanical advantages and reduces the injuries in sports.

2.4 Training and health

The sports manufacture and industry are widely take helped from the computer, for preparation of advance training, schedules, diet & nutrition plan for athletes, further, science also provide the digital instruments to assess the various physiological and psychological parameter, with help of these equipments layman also diagnose or assess the effect of training and improvement of various parameter but in later stage, to assess the physiological & psychological was a complicated work for coaches. In the present just giving the information of the athlete like height, weight, age and other body measurement into the device, athlete get a planned program

that helps to get advantage in competition. Now a day's athlete may find the precise and meticulous training equipments as per their sports event and requirements.

2.5 Eliminating human error

The evolution in the sports are continues for the centuries, where the use of technologies have very significant role, it made huge impact on the nature of the sports. However, making the changes in due to involvement of the computer sometimes it create the controversy, some people have different observation regarding the inclusion of the technologies in the sports. Although no doubt human may do the mistake but not machine, as human has certain limitations. To eliminating the error in the sports many technologies were used in the sports, computer science introduced equipments & devices time to time as it demanded. There are some technologies which are widely used in the present state.

3. METHODS

3.1 Hawk-Eye Technology

It is a combination of computer and camera system, which trace the object trajectory. This system is opted in cricket, tennis, rugby and many more games & sports, many sports are to come to utilization of this system, under this many sports are under trails. The purpose of this system is to overcome and improve the decision making to the television officials and also useful for athlete safety. The Hawk Eye installed cameras take 600 frames per second, this information being analyzed through computer and sent to referee handset/devices. There are some examples of sports where this technology is using.

3.1.1 Tennis

It used for the line review of the ball, however it used in major tournaments only

3.1.2 Basketball

National basketball association tournaments it being used for the last touch and to determine whether release the ball within the shot clock expires.

3.1.3 Cricket

This system is widely used in cricket, players may take decision referral system (DRS), and with the help of hawk-eye system and hot spot system third umpire (TV officials) take decision.

3.1.4 This system is also widely used in Baseball, Football, Rugby League and Union,

3.2 Software

There are numbers of software packages are developed and designed for nutrition and fitness by the help of connoisseur, which individual may easily access on internet and many websites. A huge number of professionals recommended fitness packages are available as per the individual requirements with variations of features(8).

Instant Replay: - it is an excellent example of technology which is ever used in sports. This is helpful to the officials to watch precisely the moment and given the chance to outlook the sports events, with different angle and motion.

3.3 Sensor Tools

This technologies help to exactly find out the correct place of an object at a specified time. It is generally used where the naked eye are not able to see the moment. This system is worked on the laser beam technology with the combination of sound analysis. This Computer technology is implemented in cricket, tennis and many other sports. A Sensor system technology is very help to get exact location of the object at a specified moment. It used often when naked eye unable to see the exact moment. Sensor tools are used as per there requirement, sensor system use in combination of laser beam and sound to find the precise results, it frequently used

in cricket and tennis for decided the unfairly blocked from wicket and to determine the ball position during the line touch (9).

3.4 Timing Systems

This technique help to reduce the errors in the sports, it recorded the moment of thousand of per second which is more than the recommendations of sports federations. In past racing events time were taken by stop watch which have less consistency. Later a pistol wire was connected to clock, on fire simultaneously clock start the counting. Similarly in various events laser beam and photo shot was used to decide the accurate result. In swimming touch pads used for taking timing.

3.5 Awards

To enhance the inter-disciplinary approaches between the sports sciences and sports, organization began the many awards to the computer & it scientist for motivating them (10). These type of awards in the field of sports are given in various categories. Some of them categories are mentioned below-

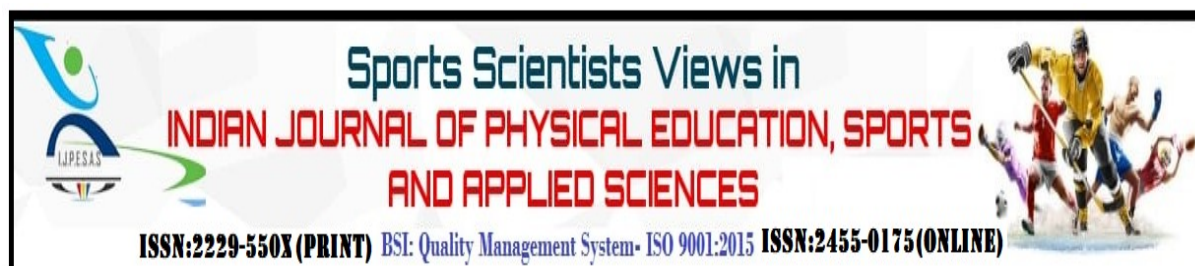
Best Sports App, New Technological Concept in Sports, Technology collaboration , Technology for Commercial Return, Technology for Fan Engagement, Technology for Managers and Coaches, Technology for Use by a Venue, Stadium, Club or Franchise, Technology to Promote Participation, Sports Kit or Apparel Technology, Use of Technology by a Rights Holder, Broadcaster or Governing Body, Use of Technology by a Sponsor, Wearable Technology in Sport, Sport England Design Challenge and Sports Technology Innovator

4. CONCLUSION

It's difficult to envision we ever survived by in the sports world without computers, especially when you consider that we now thoroughly investigate every aspect of an athlete's performance and keep stats on almost everything. Computers have proven to be invaluable to sports because of the gains they've enabled in player performance, training, equipment, and sports medicine.

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ASSESSMENT OF KNOWLEDGE AND HYDRATION AWARENESS AMONG SWIMMERS.

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ABSTRACT

Hydration plays an important role in performance of the swimmers. Swimmers are in water hence many times they don't realize the need of water but they have massive energy expenditure and need proper intake of water and nutritional fluid to remain hydrated (Raphl Teller, 2011). The study was conducted to check the knowledge of hydration among the swimmers. Responses were collected form the swimmers of various age group who are the professional swimmers and participate in the State, National and International swimming competitions regularly. A self-administered questionnaire was shared among the swimmers to collected the responses. Based on those responses the awareness of water consumption and nutritional fluid was analysed. It was observed that the swimmers lack the knowledge of hydration they rely on coaches, media, internet to get hydration knowledge which is not sufficient. The amount of water consumption during a day was studied in which it was found that only 10% swimmers in the age group of 19 years and above consume the right amount of water (3-4 litre) as recommended by Institute of Medicine (Joe Buchanan, 2017). It was also observed that few swimmers consume excess water in a day (>5 litre) due to which the sodium present in the blood may get diluted. It was also observed that 50% swimmer of various age group never consumed nutritional fluid during the training and many swimmers face the dehydration symptoms like tiredness, fatigue, muscle pain and cramps.

Keywords: Hydration, Swimmers, Water, Nutritional Fluid

1. INTRODUCTION:

Swimming is a high endurance sport which include pool swimming and open water swimming. The duration and practice for both is different. Swimming requires developing a high aerobic and anaerobic capacity for strength and technical efficiency. Because of massive energy expenditure proper water consumption is very much essential to re-build, recovery and inhibit the performance. Apart from nutrition and dietary intake a swimmer always needs to intake sufficient water to stay hydrated. (E Jéquier and F Constant, 2009) The dehydration during pool swimming is lower than the open water swimming, but still a swimmer has to intake 2-3 litres of water in a day to stay hydrated. The Institute of Medicine has recommended 3.7 litres of water a day for men age 19-30, and 2.7 litres of water a day for women age 19-30. A common thumb rule that is often stated for remaining hydrated is to take one's body weight, divide it by two, and drink that much water in ounces.(Joe Buchanan, 2017)

The swimmers are in water hence they do not realize that they are still sweating losing fluid and as they are surrounded by water the brain is tricked as per the surrounding environment and does not signal mouth and throat to be thirsty. (Swimmo.inc)

It has been observed that intensive and long-distance swimming requires lot of fluid intake and need additional hydration, water is not sufficient to rehydrate the body. (Raph Teller, 2011) Hence in training apart from water intake the swimmers need to be provided with replenish electrolytes, power energy drink to maintain the body fluid balance and avoid the dehydration. The swimmer during the competition day is provided with more electrolytes and sports drinks to stay hydrated (Archive team, 2011). A 2% loss in body weight due to water loss leads to dehydration a condition that can reduce strength by 2 percent, power by 3 percent and endurance in athletes by 10 percent. According to the National Academy of Sports Medicine, dehydration can affect cognition, coordination, response time, tracking, short-term memory, attention, focus and fatigue. (Orlando Health,2020)

Maintaining the proper hydration is very much essential for a swimmer. Hydration helps to optimize carbohydrate and ensures best performance during competitions (Andrea Boldt, 2020). Drinking water before and after the training regulates the body temperature, delivers nutrients and oxygen to body cell and removes waste from the body. The proper fluid balance in body improves circulation, regulates body temperature and promotes proper digestion and absorption of nutrients, supplies nutrients and oxygen to body cells. There are various symptoms of dehydration commonly observed in the swimmers, reduce in energy or apathy, infrequent urination or dark urine, sudden decline in strength and co- ordination. Apart from this the dehydration also affects the muscles and joints which leads to cramps, cartilage wear and friction in the joints. (Rob S Williams,2019)

2. METHOD

A self-administered questionnaire was prepared to assess the level of hydration knowledge and drinking habits of swimmers. Various swimming club were approached which were affiliated with Thane District Swimming association (TDSA) and Swimming Federation of India (SFI) in Thane region and professional swimmers were analysed who participate in the State, National and International swimming competitions regularly. The participants for this study were of various ages groups and signed consent was obtained from both the participants and their parent/legal guardian.

2.1 Procedures

A self-administered questionnaire was prepared based on the various questions which consisted of hydration knowledge and was utilized to assess the level of hydration knowledge,

drinking habits of swimmers. Various swimming club were approached in Thane region and swimmers who are the professional swimmers and participate in the State, National and International swimming competition regularly were analysed.

2.2 Data analysis

The analysis was carried out through a Statistical Package of Social Sciences (SPSS). Descriptive statistics- Frequencies, percentages, measures of variability were computed, cross tab were used to show the relationship between variables and finally the data was concluded.

3. RESULTS:

The data was analysed by circulating the self-assessed questioner and the observation were noted based on the responses provided by the swimmers. Among the total swimmers 76% were the male participants and 24% were the female participants of the various age group. The age groups and participation as per the age group are mentioned in the Table1.

**TABLE 1
PROFILE OF POPULATION**

	Classification	Frequency	Percentage (%)
sex	female	6	24
	male	19	76
Age range	Under 8	3	12
	9-12	5	20
	13 - 15	3	12
	16 -18	4	16
	19 and above	10	40

3.1 Nutritional Knowledge:

It was observed that knowledge of hydration is gained in various ways by the swimmers. 44% swimmers get knowledge of hydration from Coaches. 32% get knowledge of hydration from parents/relatives/friends, 16% get knowledge of hydration from Media /Internet/Websites/ Articles and only 8% get knowledge of hydration from professional consultant.

3.2 Amount of water consumed during a day:

The amount of water consumed by the swimmers throughout the day differs as per the age group hence the consumption of water is calculated as per the age groups. Details mentioned in Table 2. It was observed that in the age group of 19 years and above 70% swimmers consumed 2-3 litres of water in a day, in 16-18 years age group 50% swimmers consumed 3- 4 litres of water, in 9-12 years 60% consumed 2-3 litres of water, in under 8 years 66.70% consumed 1-2 litres of water. While in the age group of 16-18 years 33.30% swimmers were found consuming more than 5 litres of water in a day.

**TABLE 2
AMOUNT OF WATER CONSUMED BY THE SWIMMERS DURING A DAY.**

Amount of water consumed in Litre (L)	Age					Total
	Under 8 Years	9 to 12 years	13 to 15 years	16 to 18 Years	19 years and above	
1-2 L	66.70%	40.00%	0.00%	25.00%	0.00%	20.00%
2-3 L	33.30%	60.00%	0.00%	50.00%	70.00%	52.00%
3-4 L	0.00%	0.00%	33.30%	0.00%	10.00%	8.00%
4-5 L	0.00%	0.00%	33.30%	0.00%	10.00%	8.00%
More than 5 L	0.00%	0.00%	33.30%	25.00%	10.00%	12.00%

3.3 Amount of water consumed during the training:

The swimmers have 3-4 hours of training session during a day and the amount of water consumed during the training is described in Table 3. In all the age groups more than 50% swimmers consumed 500 ml of water, except in the age group of 9-12 years 60% swimmer consumed 250 ml of water which is very less than the recommended consumption of water during the training.

TABLE 3
AMOUNT OF WATER CONSUMED BY THE SWIMMERS DURING TRAINING.

Amount of water consumed during the training. (ml/L)	Age					Total
	Under 8 Years	9 to 12 years	13 to 15 years	16 to 18 Years	19 years and above	
250 ml	33.30%	60.00%	0.00%	0.00%	10.00%	20.00%
500 ml	66.70%	0.00%	0.00%	75.00%	50.00%	40.00%
500-1000 ml	0.00%	40.00%	66.70%	0.00%	30.00%	28.00%
More than 1 litre	0.00%	0.00%	33.30%	25.00%	10.00%	12.00%

3.4 Nutritional fluid consumed during the training:

As per the details mentioned in Table 3, It was observed that more than 50% of swimmers in the various age group never consumed any nutritional fluid except the age group of 13-15 years in which 66.70% swimmers consumed nutritional fluid.

TABLE 4
NUTRITIONAL FLUID CONSUMED BY THE SWIMMERS DURING TRAINING SESSION

Nutritional Fluid consumed during training session	Age					Total
	Under 8 Years	9 to 12 years	13 to 15 Years	16 to 18 Years	19 years and above	
Always	33.30%	0.00%	66.70%	0.00%	10.00%	16.00%
Mostofthetimes	0.00%	0.00%	0.00%	50.00%	0.00%	8.00%
Never	66.70%	40.00%	0.00%	50.00%	50.00%	44.00%
Sometimes	0.00%	60.00%	33.30%	0.00%	40.00%	32.00%

3.5 Tiredness fatigue and muscular cramps observed after training:

It was observed that most of the swimmers felt tired, fatigue and also had muscular cramps sometimes after training, 60% swimmers of age group 19 years and above,50% swimmers of age group 16-18 years, 66.70% swimmers of age group 13-15 years and 60% swimmers of age group 9-12 years sometimes feel muscle pain and cramps after the training. The observations are mentioned in the table 5 and 6.

TABLE 5
TIREDNES AND FATIGUE OBSERVED BY SWIMMERS AFTER TRAINING SESSION.

Feel tired or fatigue after training session	Age					Total
	Under 8 Years	9 to 12 years	13 to 15 Years	16 to 18 Years	19 years and above	
Always	0.00%	0.00%	0.00%	0.00%	10.00%	4.00%
Most of the times	0.00%	20.00%	0.00%	25.00%	10.00%	12.00%
Never	66.70%	0.00%	33.30%	0.00%	0.00%	12.00%
Sometimes	33.30%	80.00%	66.70%	75.00%	80.00%	72.00%

TABLE 6
FREQUENT MUSCLE PAIN/ CRAMPS OBSERVED BY THE SWIMMERS AFTER TRAINING SESSION.

Frequent muscle pain/cramps after the training session	Age					Total
	Under 8 Years	9 to 12 years	13 to 15 years	16 to 18 Years	19 years and above	
Most of the times	0.00%	20.00%	0.00%	25.00%	0.00%	8.00%
Never	66.70%	20.00%	66.70%	25.00%	40.00%	40.00%
Sometimes	33.30%	60.00%	33.30%	50.00%	60.00%	52.00%

4. DISCUSSION

In this study it was observed that swimmers gain the knowledge of hydration from parents, friends, media, internet, 44% swimmers gain knowledge of hydration from coach and only 8% approach the professional nutritional consultant. After observing the water consumption during day and during training it was found that the swimmers have insufficient knowledge about hydration. As hydration is very important for swimmers to maintain the body fluid balance the observations indicates that the swimmer should follow proper hydration consumption. The Institute of Medicine recommend that the adult swimmers aged 19 years and above need to consume 3-4 litres of water during the day but only 10% swimmers of age group 19 years and above consume 3-4 litres of water. Drinking excess water is also not good for the swimmers as per Orlando Health (2020) after drinking excess water the sodium that is naturally found in the blood gets diluted. Sodium is an electrolyte, which helps to maintain blood pressure and helps nerves, muscles and body tissues to work correctly. In 19 years and above 10% swimmers and in 16-18 years age group 33.30% swimmers consume more than 5 litres of water, which was observed as an excessive water consumption during a day. During training 500- 1litre amount is recommended for swimmers of all age group as per the Orlando Health (2020). It was observed that in age group of 9-12 years 60 % swimmers consumed only 250 ml of water during the training, which was less than the recommended water consumption.

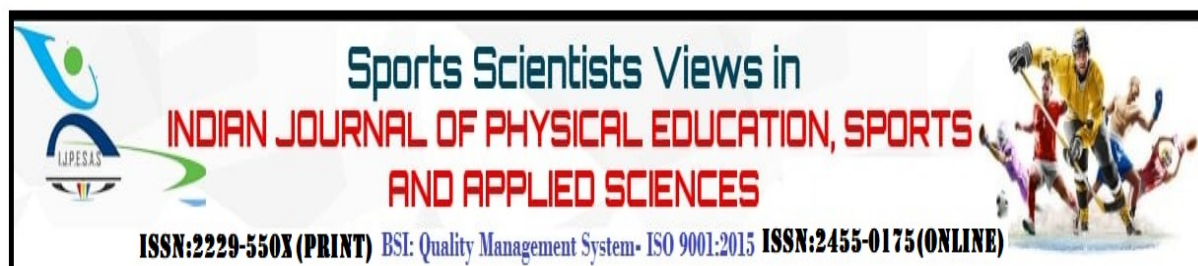
The swimmers need to be hydrated during training; hence consumption of nutritional fluid is very much essential. Nutritional fluid helps to balance the electrolyte contents in the body and keeps body hydrated for longer durations. During training 50% swimmers of age group 19 years and above and 16-18 years never consumed any nutritional fluid/energy drink. Due to low or never consumption of nutritional fluid the swimmers may lose the electrolytes and face the dehydration symptoms like tiredness, fatigue, muscle pain and cramps. 25% swimmers in age group of 16-18 years most of the time face muscle pain and cramps and 60% swimmers of 19 years and above face the muscular pain and cramps sometimes. This frequent muscle pain and cramp is observed due to lack of electrolytes (sodium, potassium, magnesium, calcium, and chloride) in body which supports the normal muscle contraction. The consumption of nutritional fluids helps the body to replenish the electrolytes.

5. CONCLUSION:

The swimmers strive hard to perform the best at competitive level and they undergo tremendous pressure for best performance hence they should be always supported and guided with the proper knowledge of hydration and intake of water. The proper hydration plays a crucial role in the swimmer's performance hence apart from water they should also regularly consume nutritional fluids and juices. It will help swimmers to balance the electrolyte and avoid muscle pain, cramps during and after training and tiredness and fatigue after the training session.

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REVIEW OF LITERATURE ON RECENT TRENDS OF REHABILITATION IN URINARY STRESS

INCONTINENCE IN WOMEN.

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ABSTRACT

An involuntary leak of urine with abrupt increases in intra-abdominal pressure, such as when coughing, laughing, sneezing, or exercise, is known as stress urinary incontinence (SUI). SUI frequently results from weak pelvic floor muscles and inadequate mechanical support of the vesicourethral sphincteric unit. The leaking occurs without detrusor contraction, which is significant for this form of UI. The most prevalent kind of incontinence in women is SUI. Due to the risk of urine leakage, women with UI avoid sexual activity. Numerous patients limit their everyday and social activities as well as their hydration consumption. This disorder's multifaceted, complicated etiopathogenesis may be brought on by diseases and organ and system-specific dysfunctions. UI is a sign or side effect of a lot of things severe, frequently recurring feminine diseases. A number of significant risk variables have been discovered, including increasing age and BMI. Stress urine incontinence affects a woman's living circumstances in terms of her professional, interpersonal, mental, physical, and sexual elements of her life. symptoms appear during a significant exertion, which raises intra-abdominal pressure. The physical examination, urine analysis, and questionnaires are all part of the health assessment. These are done to assess the disease. The patient history includes urinary symptoms, frequency, urgency, hematuria, recurrent urinary tract infections, and nocturia. Pharmacological, surgical, or rehabilitative treatments are available. According to the most current data, physiotherapy can be effective in treating stage I SUI in up to 80% of patients and stage II SUI in 50% of patients.

Keywords:Physiotherapy, Patients. Rehabilitation, Stress ,Women.

1. INTRODUCTION

The International Continence Society defines urinary incontinence (UI) as "an uncontrollable loss of urine which is objectively a demonstrable, social, and sanitary concern" Ghaderi F. et al (2014). The term "stress urinary incontinence" (SUI) refers to the involuntary leakage of urine with abrupt increases in intra-abdominal pressure, such as when coughing, laughing, sneezing, or exercise or heavy weight lifting. Inadequate mechanical support provided by the vesicourethral sphincteric unit and weak pelvic floor are two common causes of SUI. The fact that the leaking occurs without detrusor contraction is significant for this sort of UI. Ptak, M., et al (2017) The most prevalent kind of incontinence in women, SUI lowers the quality of life for those who suffer from it. A. Ford and others (2015)

The afflicted ladies retreat from social life because of embarrassment, worry, and dread of offensive odours or uncontrolled urine leakage. Additionally, UI lowers the self-esteem of women and has a bad impact on their sexual lives. Because there is a chance of urine leakage during sex, women with UI avoid it. Sexual dysfunction has been shown to affect between close to 50% and 68% of women with incontinence. SG Vitale and Co. (2017). Many patients limit their daily and social activities and cut back on their hydration intake, the group Biri A. (2006) Female stress urinary incontinence prevalence rises with age, Nystrom E, et al (2015) There are more than 200 million people who suffer from urine incontinence globally. From middle age forward, incontinence happens regularly and is linked to a lower standard of living R. Levy, et al (2006). The most common kind is stress urine incontinence, and its prevalence ranges from 13.1% to 70.9% in various groups (SUI). E. Nystrom, et al (2015)

However, a lot of women choose not to get medical attention. Incontinence is seen to be "normal," discussing incontinence is humiliating, the symptoms are not taken seriously by medical professionals, or the treatment options are inadequate. These are all possible reasons for delaying therapy. Hannestad YS et al. (2000) Between 10% and 40% of adult women are thought to be affected, and between 3 and 17% are thought to be severely affected. The yearly incidence is thought to be between 2 and 11%. Mils et al. (2009) Ageing, pregnancy, childbirth, and obesity are risk factors for SUI. Intrinsic sphincter deficit (ISD), urethral hypermobility, or a mix of the two are further classifications for SUI. ISD is defined by lack of urethral closure. When the bladder neck muscular support is insufficient, the proximal urethra cannot be reached by the intra-abdominal pressure, causing urethral hypermobility. Wang Hung-Jen et al (2011) The urogenital tract and pelvic floor both contain oestrogen and progesterone receptors. This might suggest that these hormones are crucial for continence. In fact, oestrogen raises urethral closure pressure, maybe in part due to better blood flow. Oestrogen has also been proven to strengthen the epithelia in postmenopausal women's vagina, urethra, and bladder walls. Consequently, the usage of HT for postmenopausal women predicted to lower the possibility of SUI. Rahkola-Soisalo P. et al (2019)

According to US research, undergoing surgery for pelvic organ prolapse (pop) or stress urinary incontinence (SUI) carries an estimated 11% lifetime risk. The likelihood of urine incontinence is greatly reduced following caesarean birth, according to various epidemiological studies. Leijonhufvud A. et al (2011) The primary muscle of the pelvic floor, called the levator ani, is made up of 70% type I fibres, which contract slowly, and 30% type II fibres, which contract quickly. The proportion of fast-twitch fibres decreases in SUI. Additionally, it has been noted that ageing causes decreases in type I and type II fibre counts as well as in their diameter, resulting in a higher incidence of SUI in elderly women. Because of its outstanding outcomes, lack of side effects, and reduced surgery and hospital expenses, clinical therapy for SUI is growing in popularity. Since they have no side effects, perineal workouts are highly recommended. M. Zanetti

et al (2007) Pelvic floor muscle training is the primary therapy for SUI (PFMT) K. Moore et al (2012). Forgetting, not prioritising, not monitoring, and failing to see the advantages of training are just a few of the barriers to exercise that prevent PFMT from being as successful as it may be. D. Frances Borello et al (2013)

2. ETIOPATHOGENESIS

Men and women experience SUI at different etiologies. Poor urethral sphincter function in women has an unknown and poorly understood cause. Body mass index (BMI) and growing older are two significant risk variables that have been discovered. Along with the denervation of important pelvic floor components as people age, muscle fibres start to disappear and transform into scar tissue.

This development is significantly influenced by the number of pregnancies that result in future vaginal births. Therefore, SUI is considerably less likely to occur in nulliparous women or those who gave birth through C-section. Additionally, the development of SUI may be influenced by menopause-related hormonal changes, smoking, chronic constipation, cognitive decline, radiation exposure, or post-surgical problems. It's interesting that symptoms typically get worse before a period. These details suggest that on the function of the urethra and sphincters, the levels of oestrogen and progesterone may be crucial.

The multifaceted and complicated etiopathogenesis of this disorder may be brought on by diseases and organ and system-specific dysfunctions. In light of its diverse etiopathogenesis, urine incontinence is therefore treated as a symptom rather than as a single disease entity. Many significant, frequently long-lasting female ailments have urinary incontinence as a symptom or side effect. Witko J., et al (2020) stress urine incontinence makes life more difficult for women in terms of their jobs, relationships, mental health, physical health, and sexual activities Smith AP., et al (2016).

The five primary hypothesis that have been put out are listed below. Nevertheless, micturition is a complicated process, thus it is likely that the pathophysiology of ISD is multifaceted and has elements of each explanation.

1. According to the urotheliogenic theory, aberrant signalling or activity in the bladder urothelium causes urgency to start. (Eapen RS. Et al., 2016) the urotheliogenic hypothesis, according to which a urethral issue is what causes urgency. This theory was mostly founded on the observation that a lot of patients experience urgency, especially while shifting positions. I. Scarneciu et al (2021)
2. According to the myogenic theory, increasing spontaneous activity results from the detrusor's muscarinic receptors being more susceptible to cholinergic activation (Eapen RS. Et al 2016). As shown by Brading, the detrusor has a difficulty. Other writers have shown further detrusor dysfunctions that cause unrestrained detrusor contractions. I. Scarneciu et al (2021)
3. According to the neurogenic theory, the central inhibitory pathways and/or peripheral nerves in the detrusor that cause the micturition reflex to occur are damaged or disrupted. Eapen RS. & others (2016)
4. According to the supraspinal hypothesis, the brain and brainstem are where urgency is said to have its roots. Certain white matter regions may deteriorate with ageing, which might cause problems with the urinary system.
5. Detrusor underactivity: This condition, which has been linked to urothelial or suburothelial dysfunction or detrusor muscle dysfunction, gives the appearance of urgency. I. Scarneciu et al (2021)

3. RISK FACTORS OF SUI

3.1 Obesity

According to the available data, BMI is inversely correlated with the prevalence of stress incontinence. Theoretically, the rise in intraabdominal pressure that occurs along with a higher BMI causes a correspondingly larger intravesical pressure, which defeats the urethral closure pressure and resulting in incontinence. Because the static pressure inside the bladder is larger in this case, the amount of increased intra-abdominal pressure required to propel urine through the urethra is less. Bai SW, et al., 2002 In 138 morbidly obese women who underwent weight reduction, Deitel found that the prevalence of SUI decreased from 61 to 11 percent. Magon et al (2011)

3.2 Pregnant women and Childbirth

A direct link exists between the beginning, progression, and outcome of SUI and pregnancy and delivery. The risk of postpartum incontinence after pregnancy might quadruple. The nevertheless, there being a paucity of objective data, the risk factors for SUI during pregnancy are not yet fully understood, and clinical expertise of medical professionals is utilised to determine if SUI is predicted to occur in pregnant women. Jiejun Gao and co. (2021). In a study of more than 15,000 women, urine incontinence was prevalent in 10.1% of nulliparous women, compared to 15.9% of caesarean birth patients and 21% of vaginal delivery patients. Lawrence N. Wood (2014) SUI is more prevalent in parous women than nulliparous women. If incontinence occurs during pregnancy, it usually goes away by puerperium. However, it might recur during consecutive pregnancies, get worse with time, and eventually become a serious issue. Stress incontinence's frequency is possibly correlated with the number of pregnancies and is much greater in multiparous women than nulliparous women. Groom A (1999) Incontinence after delivery may be caused by direct injury to the pelvic muscles and their connective tissue attachments, as well as nerve damage from trauma or tension. AJ Snooks (1986) In addition to causing pelvic organ prolapse and SUI, childbirth can harm a mother's ability to control her pelvic floor. Theo G (2021).

3.3 Smoking and chronic lung disease

An increased risk of SUI exists in women with chronic obstructive pulmonary disease who are older than 60. Smoking cigarettes is a separate risk in a similar way. The relative risk of SUI is between 1.8 to 2.92 among current smokers, according to research by Hannestad and colleagues as well as Bump and McClish. Smoking appears to have a strong causative association with SUI, whether directly or through conditions like chronic obstructive pulmonary disease that are linked to smoking and lead to greater coughing.

3.4 Hysterectomy

The pelvic floor muscles may be harmed by a hysterectomy, which might result in incontinence. In addition to cystocele (prolapse of the bladder), rectocele (prolapse of the rectum), uterine prolapse, and vaginal vault prolapse following hysterectomy, stress urinary incontinence has also been linked to vaginal prolapse, most likely due to the shared risk factor of the weakening of the pelvic floor muscles. Reena, C., et al (2007)

3.5 Prolapse of a pelvic organ

When the prolapse is decreased or healed, there is a substantial risk of developing stress urine incontinence (SUI), which commonly coexists with pelvic organ prolapse. According to the research, SUI following vaginal reconstructive surgery poses a risk for 36 percent to 80 percent of women with extensive vaginal prolapse Reena C., et al (2007).

3.6 Additional Risk Factors

Family history is significant because women who have incontinent mothers or older sisters are more prone to have stress and mixed incontinence. YS Hannestad (2004) The prevalence of any sort of incontinence, most frequently stress urinary incontinence, was found to be 40% in a cross-sectional nationwide study of more than 4300 women who used more caffeine daily than 204 mg (about the amount of caffeine in one cup of coffee). Gleason JL et al. (2013) Occupation: A job that requires strenuous physical labour and the carrying of large objects might cause urine incontinence. Physical activity level: Too little or too much physical exercise have both been shown to increase the risk of urine incontinence. Nygaard IE and others (2016)

4. CLINICAL PRESENTATION

SUI symptoms that are frequently experienced include:

The tough to control acute need to urinate. Urine loss from leaking or accidentally spilling, sometimes just after an intense desire to urinate. urinating often, typically eight or more times in a 24-hour period. Need more than two nighttime awakenings to use the restroom. C.J. Palmer et al (2017) Cough-induced detrusor overactivity leaking may also happen after a little delay, hence leakage must be monitored right away after the cough. Referred to as SUI on prolapse reduction, stress incontinence is a symptom that is only present after the correction of a coexisting pelvic organ prolapse. Urodynamic stress incontinence is the name given to the urodynamic observation of SUI. P. Abrams, et al (2002) While increased voiding frequency noted on a bladder diary, micturition time chart, or frequency volume chart may be seen as an indication. UI is linked to poor self-rated health, reduced emotional and psychological well-being, worsened sexual relationships, lower quality of life, and depressed symptoms. It has been reported to limit both social contacts and physical activity. It should be highlighted that SUI cannot be diagnosed only based on these symptoms because they can also be present in a wide range of other diseases. The patient's voiding history, a medical assessment, a physical exam, and the required tests should all be performed in order to rule out urinary tract infections, neurological problems, or other diseases. C.J. Palmer et al (2017)

Some writers claim that between 50 and 88 percent of all cases of urine incontinence are caused by stress urinary incontinence (SUI). Three phases of the disease's course are identified by stress urine incontinence:

- 4.1 Stage I - symptoms only appear during a significant exertion that raises intra-abdominal pressure. Sneezing, coughing, or laughing should be taken into consideration at this point;
- 4.2 Stage II - the symptoms develop with moderate exertion like jogging, hard lifting, or sports.
- 4.3 Stage III: Symptoms are noticeable with little to no physical effort and a little increase in intra-abdominal pressure. This stage results in a substantial increase in intra-abdominal pressure. Walking and rising from a laying to a standing position are two situations when urinary incontinence can happen. Gabriela Koodyska et al. (2019)

5. MEDICAL AND SURGICAL MANAGEMENT

According to the Food and Drug Administration (FDA), there are no pharmaceutical therapies for SUI that have been authorised. For clinical signs of mixed urine incontinence, anticholinergic drugs and/or beta-3 receptor agonists are most frequently employed (SUI combined with overactive bladder). Desmopressin, estrogens, and selective serotonin noradrenaline inhibitors (SSNRI) may also be helpful.

5.1. Oestrogen therapy for female stress incontinence:

Oestrogen administration resulted in heterogeneous urine continence. Few low power trials with brief follow-up have suggested an improvement in leaks, but major follow-up studies with populations of incontinent or non-symptomatic women have not supported this. For the prevention or treatment of urinary incontinence, the advantages of oral oestrogen therapy alone or in combination with progesterone have not been shown. postmenopausal ladies who are incontinent. The frequency and severity of urge incontinence are improved with vaginal oestrogen therapy. It is not advised to treat or prevent female stress urine incontinence with oral oestrogen therapy.

5. 2. Duloxetine is used in the treatment of female stress incontinence.

When it comes to enhancing quality of life and improving perceived improvements, duloxetine is notably superior to a placebo. As much as 50% fewer leakage incidents were reported over the therapy period, according to case studies. There is yet no proof that extended or post-administration duloxetine treatment results in sustained effectiveness. Duloxetine has not yet been proven to be effective in treating female stress incontinence, and it is not advised to use it as a first-line therapy for urine incontinence. By activating the sympathetic system of the smooth muscle of the urethra, adrenergic compounds have demonstrated only small benefits in stress urine incontinence, but these medications have since been taken off the market due to the danger of hemorrhagic stroke. Imipramine is a tricyclic antidepressant that has been successfully used to treat stress incontinence and mixed incontinence. It has anticholinergic and adrenergic reuptake inhibitory actions. Regarding the use of imipramine to treat urine incontinence, there are no randomised clinical studies available.

6. SURGICAL TREATMENT

6.1 Mid urethral sling (MUS):

The purpose of the tension-free midurethral sling is to support the pubic bone, suburethral vaginal hammock, and pubococcygeus muscles at the midurethra. The tension-free midurethral sling is the most popular procedure for treating stress urine incontinence because to its simplicity of insertion, short operating time, tiny incisions, and speedy patient recovery.

6.2 Retropubic urethropexy or colposuspension:

The Burch colposuspension and the Marshall Marchetti Krantz operation are both types of retropubic urethropexy, sometimes known as colposuspension. Permanent sutures are placed at the bladder neck supported by either Cooper's ligament (Burch) or the periosteum of the pubic symphysis using a tiny suprapubic incision (Marshall Marchetti Krantz). About 80% of stress urine incontinence can be predicted to be cured by retropubic urethropexy as main or secondary surgery.

Peggy N., et al (2006)

6.3 Vaginal mesh:

Mesh is safe and effective when used in midurethral synthetic slings and for the surgical treatment of stress incontinence. The FDA issued a warning concerning the surgical treatment of pelvic organ prolapse and incontinence with vaginal mesh in 2008. A revised FDA warning issued in 2011 after the number of adverse events reported to the FDA exceeded 3874 stated that the majority of mesh-related complications were linked to mesh that was vaginally implanted for prolapse and that there was insufficient evidence to advise against using mesh for stress urinary incontinence procedures. In a joint statement released in January 2014, the American Urogynecologic Society (AUGS) and SUFU firmly endorsed the use of polypropylene mesh in midurethral sling surgery. The declaration acknowledged the technique as the, all-encompassing norm that is secure.for the treatment of female sufferers of stress incontinence. Only 4% of women

in a study of adverse events more than two years after a sling operation suffered mesh-related issues, and the majority of these did not call for surgical intervention. Bruce L. et al (2011)

6.4 Urethral bulking procedures:

This is intended to cure stress incontinence by inflating the proximal urethra/bladder neck submucosal tissues artificially. These operations involve injecting synthetic or autologous fillers (such as calcium hydroxylapatite, carbon bead particles, or bovine collagen) into the urethral wall to give it more volume, improve urethral coaptation, and reestablish the mucosal seal mechanism of continence. The supple urothelium and the vascularity of the submucosal arteries of the urethra produce a leak-proof mucosal barrier that is necessary for continence. Low morbidity and minimal UTI and short-term voiding dysfunction are associated with the injection of bulking agents. Donna Ye, et al (2011)

6.5 Fascial sling:

The urethrovesical junction is elevated into an intraabdominal space by the fascial sling's hammock-like action underneath the bladder neck. to give urethral compression in a specific area. The ends of the sling or suspending sutures used in these treatments are anchored to the rectus fascia, which sets them apart from contemporary tension-free operations. The sling and urethra cannot be raised during straining in some sling method variations when the ends of the sling are fastened to an immovable tissue (the Cooper's ligament or bone anchors in the pubic symphysis). The sling is supposed to provide a safe platform for urethral support during these procedures. The urethra is compressed from both above and below as the intraabdominal pressure rises because the urethra is forced downward against the sling. It is hypothesised that this compression of the urethra causes an increase in urethral resistance and a stress incontinence has resolved. Navneet Magon et al. (2011)

6.6 Laser Treatment :

Currently, intravaginal laser treatment with minimally invasive techniques is a potential new therapeutic strategy. For the treatment of SUI, three different laser modalities have been published, including the non-ablative Er:YAG laser therapy (2,940 nm) with SMOOTH mode technology and dual-phase erbium-doped yttrium aluminium garnet (Er:YAG) laser therapy (2,940 nm) combining fractional cold ablation and thermal ablation. In each of the three conditions mentioned above, laser treatment works by causing neocollagenesis, which thickens and strengthens the anterior vaginal wall and, in turn, improves the support of the bladder and urethra and, as a result, the ability to maintain continence.

7.PHYSIOTHERAPY MANAGEMENT

According to the most recent data, physiotherapy can be effective in up to 80% of patients with stage I SUI and mixed form and 50% of patients with stage II SUI.

Training the bladder and the pelvic floor muscles (PFMT) under close supervision are advised. Here, "supervised" is the important term. Navneet Mgon and others (2011)

7.1 PFMT (pelvic floor muscle training):

The most common form of therapy for SUI is PFME, or repetitively selective voluntary contraction and relaxation of certain PFM, sometimes referred to as Kegel exercises. This technique for treating UI and enhancing the function and tone of PFM after delivery was initially proposed by an American gynaecologist by the name of Arnold Kegel in the late 1940s. Smith H., et al., (2002) It is advised to begin pelvic floor therapy for stress incontinence. floor exercises for muscles Teaching the patient to contract these muscles repeatedly throughout the day for the count of 10, from 5 to 10, is one helpful use. At first, Kegel advised the patient to contract her pubococcygeal muscles five times each time she woke up, five times upon rising, and five times

each half-hour throughout the day. 8 to 12 weeks of therapy is the ideal time frame before reevaluating the need for additional care. By telling the patient to make an effort to stop the urine stream when she is voiding, the patient can be shown how to contract these muscles. She may practise the exercises whenever she wants after learning which muscles to contract, independent of when she is voiding. Finding the appropriate muscles is crucial since working out the incorrect muscles will not reduce incontinence.

7.2 Muscles can be worked out in a variety of ways, including:

To find the pelvic floor muscles, one method is to pinch the anus muscles to stop gas from flowing. This approach should cause women to experience a "pulling" feeling at the anus. Another method involves laying down and inserting a finger into the vagina while attempting to squeeze the muscles around the finger. Both the pressure on her finger and the sensation in her vagina should be audible to her. Depending on the availability of the product and the patient's capacity to manage the therapy, vaginal support devices cost, acceptability by patients, and product. Lack of enthusiasm, a lack of continuity, and inconsistent execution are the main issues with pelvic-floor muscle training, all of which adversely influence the therapeutic effects for patients. LS Lukacz (2017) The body posture that the SUI-affected ladies exercise in may also need to be taken into account by physiotherapists. The effectiveness of a PFME progression that included practise in upright postures (i.e., sitting and standing) was compared to a PFME programme that was solely completed in the supine position in order to determine which was more beneficial at reducing SUI. They demonstrated that exercising and the consequent decrease in SUI were not significantly influenced by the PFME posture employed.

7.3 . Treatment for stress urinary incontinence during pregnancy:

The first-line strategy for treating SUI throughout pregnancy and postpartum is conservative treatment or perineal rehabilitation via PFME. To avoid the emergence of SUI during pregnancy and to manage its symptoms, pregnant women are frequently advised to undertake PFME. PFME are effective since postpartum women who have done them have reported cure and improvement rates of up to 84 and 100 percent, respectively. In comparison to straightforward guidance regarding individual PFME, PFME under the supervision of a therapist (re-educator or midwife) decreases the occurrence of UI in the near term. Prescribed PFME throughout pregnancy improves pregnant UI and lowers its prevalence in late pregnancy and the first few weeks after delivery.

7.4 Biofeedback training:

It is an additional approach to teaching pelvic floor muscle control that makes use of unique tools that track the activity of the muscles. The muscles are often electrically contracted using a tiny probe that is inserted into the vagina. This aids patients in locating the appropriate muscles and learning how squeezing feels. Mgon N., et al (2011) Women may nearly instantaneously see their muscle output during exercise by using biofeedback. PFME plus biofeedback is not more efficient than PFME alone, according to the research. However, for certain women, PFME in combination with biofeedback may be a clinically effective and tolerable therapy. For individuals who could struggle to comprehend how to contract the PFM or are unable to do so, it may be a sensible technique to begin PFME using biofeedback. Correct PFME form can also be taught through biofeedback. Morkved S., et al (2002)

7.5. Cone therapy:

Even in individuals without a perceptible voluntary contraction, cone treatment may be an effective workout and biofeedback tool when employing vaginal cones. Laycock J et al., (2001)

7. 6. PFME and electrical stimulation:

Physiotherapists also employ electrical stimulation (ES) as a treatment to lessen UI. The physiological goals of ES are to enhance circulation to muscles and the capillary system, to induce muscular hypertrophy, and to restore the reflex activity of the lower urinary tract. By stimulating the PFM, ES of the pudendal nerve enhances urethral closure. Additionally, it could improve one's capacity to produce a voluntary muscular contraction and raise cognitive awareness of how these muscles are acting. For women who initially have trouble contracting the PFM, ES is a priority. Bernards ATM and others (2011) Electrical stimulation can be used alone or in conjunction with PFMT or BF, which, according to study, greatly improves its efficacy in both urine and faeces. However, it is not advised as the first line of UI therapy due to the pain or suffering the patient may experience during the surgery. For SUI, 50 Hz is the ideal stimulation frequency. Motor neurons rather than the muscle immediately activate the muscle when electrical stimulation is applied. As a result, frequencies greater than 70 Hz may harm the neuromuscular system. Both surface electrostimulation and transvaginal electrical stimulation resulted in a considerable decrease in UI symptoms.

7.7. Incontinence pessaries:

These are utilised to support and physically raise the urethra, which restores the body's proper anatomical connections. As a result, the bladder and urethra get an equal amount of increased intra-abdominal pressure, maintaining continence. In contrast to pessaries for pelvic organ prolapse, incontinence pessaries include extra characteristics designed particularly to support the urethra. Due to their non-invasive nature, pessaries are beneficial for people in whom surgery is not recommended (elderly, ill, or pregnant women). To prevent infection of the vaginal epithelium or harm to the vaginal tissues, these devices must be used under constant medical supervision. Vaginal oestrogen cream is frequently administered to patients to lower the risk of vaginal damage and ulceration. Tamara L.. Et al (2018)

7.8. Vibration Therapy for Stress Urinary Incontinence:

Numerous conditions can benefit from vibration treatment, but few research have specifically addressed SUI. However, a combination of vibration treatment and physiotherapy is advised by many years of successful experience to treat SUI. All muscles, including those that obliquely support the pelvic floor, are affected by whole-body vibration, a holistic treatment. The body makes an effort to control the vibration-induced reactions. The vibration plate workouts are individualised, or modified according to the patient's capabilities. Patients are taught the proper functional mobility, including sitting, standing, carrying and lifting objects, standing up, tying shoes, and avoiding improper posture and uneven load distribution. Coordination and efficient muscular contact are encouraged by this functional exercise. Reaction drills, like collecting a ball while balancing on one leg, Additionally, there are vibration plates. Training is provided for muscle tension, strength, and endurance, and patients gain knowledge of proper mobility in daily life. Before, after, or during individual physiotherapy, whole-body vibration is a brief yet powerful training session lasting 2–4 minutes. In 3 to 6 months, five to nine sessions are anticipated.

7.9 Behavioural therapy:

The term "behavioural therapy" refers to a group of strategies intended to encourage alterations in the patient's routines in order to reduce or eradicate the symptoms of pelvic floor dysfunction. It contains directions on how to drink fluids, how to train your bladder, and information on the lower urinary system. Urinary frequency, urgency, and nocturia, as well as quality of life, significantly improve with a 25% reduction in fluid consumption and its reduction in the hours before bed. Caffeine should not be consumed in large amounts. Patients who undergo

bladder training are able to restore control over their micturition reflex and get rid of the need to urinate.

7.10. Pilates exercise:

Pilates routines can include breath work and strengthen the pelvic floor and core. While the diaphragm expands and the pelvic floor shortens during inhalation, the transversus abdominis and transversus abdominis contract during exhale. These muscles work together to maintain and protect the lumbopelvic and urogenital structures as well as their normal function. Hein J. et al (2020) The core muscles, including the transversus abdominis, pelvic floor muscles, multifidus, and diaphragm, are engaged through synchronising breathing with movement in the Pilates method. The rhythm of the movement sequence is maintained by this synchronisation. The Pilates approach could be a desirable choice for pelvic floor dysfunction prevention or therapy. proper course of therapy and accurate information on the risks, advantages, and available therapies' alternatives. The techniques to treating stress urine incontinence have evolved significantly over the years and continue to do so. The number of patients seeking treatment for stress incontinence is rising, so it's important to stay up to date on the newest theories on how the condition works and the procedures that may be used to treat it. A summary of the most recent research and theories is provided.

8. CONCLUSION

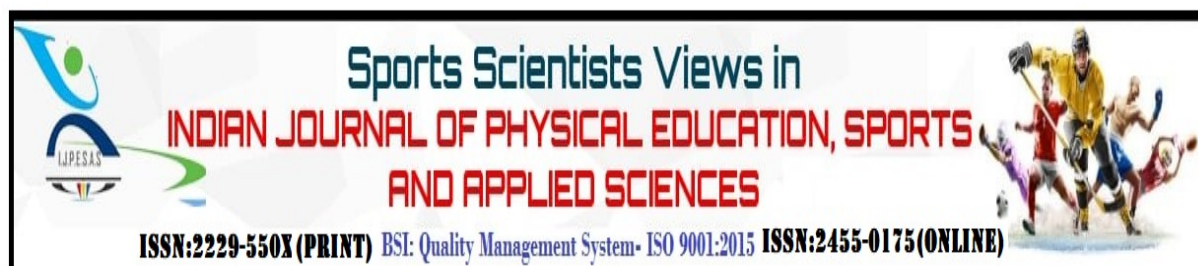
In this study we have seen that SUI is an involuntary loss of urine during sudden increases in intra-abdominal pressure and the complaint of involuntary leakage on effort, exertion, on sneezing, coughing and heavy weight lifting. It is the commonest form of incontinence in women and leads to a reduction in their quality of life. This disorder is multifaceted and complicated, and it may be brought on by diseases and organ and system dysfunctions of many kinds. In SUI patient rehabilitation is more effective than pharmacological or surgical treatment. Pelvic floor muscle exercises appeared to be an effective treatment protocol for women presenting with stress urinary incontinence. It is prevalent and costly problem that affects women worldwide. Proper and thorough elevation is imperative in order to provide patient with appropriate treatment option and accurate counselling regarding the risk, benefits, and alternatives to the available therapies. Numerous new technique have been developed in the treatment of stress urinary incontinence, and the approaches continue to evolve. With the increase number of patient seeking treatment for stress incontinence, it is essential to stay current with the latest concept in the mechanism of stress incontinence and the techniques available for its treatment. An overview of the latest literature and principles is presented.

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REVIEW OF LITERATURE ON SWIMMER SHOULDER IN ATHLETES AND ITS REHABILITATION

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ABSTRACT

Swimmer's shoulder" changed into first described through Kennedy and Hawkins (1974), who defined the situation as a painful presentation because of repetitive impingement of the shoulder in swimmers. Swimmer's shoulder is a condition with a gradual onset because of repetitive hobby and may be labeled as microtrauma and macrotrauma, the etiology of microtrauma is multifactorial and may be due to intrinsic elements or extrinsic elements. Acute shoulder subluxation can arise in swimmers with underlying shoulder laxity. Patellar subluxation can arise in people with underlying generalized laxity meniscus tear in an older athlete may be exacerbated. Acute onset of back ache can occur in swimmers. The repetitive hyperextension may additionally cause spondylolysis. In swimmer Shoulder patient rehabilitation is more effective than pharmacological or surgical treatment as it can cure the problem without any harmful effect and reduce the symptom with exercise.

Keywords: Swimmer, Rehabilitation, Review, Athlete, Shoulder

1. INTRODUCTION

Search was performed at the beginning of feb,2022 on PubMed and Google Scholar databases. A combination of Keywords and Medical Subject Headings including “Swimmer’s Shoulder”, “Rehabilitation in Swimmer’s Shoulder”, “Supraspinatus Impingement”. The affiliated information in this research project was attained from both review articles and clinical trials published from the year 2001-2022.

As Selection criterion, it was decided that articles included in the study needed to describe at least 1 possible risk factor associated with swimmer’s shoulder or or a rehabilitation protocol for the same. The articles which were not written in English, not available in full text, assessing a region other than shoulder complex were excluded.

1.1 Search Strategy

The search strategy identified 23 potentially relevant articles on PubMed and 34 on Google Scholar amounting to a total of 57 articles. After title and abstract review, only 40 articles were considered relevant and retained for analysis.

Swimmer’s shoulder” changed into first described through Kennedy and Hawkins (1974), who defined the situation as a painful presentation because of repetitive impingement of the shoulder in swimmers. As said through (Fone and van den Tillaar (2022).

Swimming is a competitive recreation that is popular worldwide and has been part of the Olympic application for the reason that first contemporary Olympic Games in 1896. Today, aggressive swimming consists of sixteen Olympic pool occasions from 50 to 1500 m lasting from about 21 s to fifteen min. Swimming differs from most different sports in numerous factors, along with: (1) swimmers are in a inclined, horizontal position at some point of performance and education; (2) both arms and legs are used actively for propulsion; (3) water immersion causes stress on the frame and impacts breathing; (4) aside from starts and turns, the forces from the athlete are at all times carried out to a shifting detail; and (5) the gadget (e.g. Swimming match and cap) used during swimming has a minimum impact on swimming performance.

In Swimmers ,the shoulder is the most not unusual body element to be injured, accounting for 31% to 44% of all of the injuries, accompanied by way of the backbone (sixteen% to 21%) and the knee (5.Five% to 14.Nine%) (Chase et al., 2013; De Almeida et al., 2015; Kerr et al.,2015; Wolf et al., 2009). The higher percent of shoulder injuries suggested might be explained by using the 90% of the propulsive pressure that comes from the upper limbs at some point of swimming (Pink & Tibone, 2000).

Shoulder pain has been said as the principle component for neglected or changed schooling in aggressive swimmers (Chase et al., 2013;De Almeida et al., 2015; Kerr et al., 2015; Wolf et al., 2009). The higher percent of shoulder injuries suggested might be explained by using the 90% of the propulsive pressure that comes from the upper limbs at some point of swimming (Pink & Tibone, 2000).

As a result of this, shoulder ache might intrude with schooling and competition performance, developing continual accidents and leading in a few instances to the retirement from sports activities participation (Hibberd & Myers, 2013).

Swimmers shoulder may be averted with adequate preseason screening which could identify impairments and schooling errors that can result in signs. If a swimmer does come to be symptomatic at some point of the season, the bodily therapist ought to become aware of the most likely impairments or schooling errors and rule out any big tissue pathology that would warrant a referral to an orthopedic health practitioner. A complete rehabilitation program typically includes strengthening of the rotator cuff and Page 1 of 2 Source scapular stabilizers, stretching anterior

chest musculature that may be shortened, and enforcing activity modification so the athlete can nonetheless take part in the game.

1. 2. Etiopathogenesis

Swimmer's shoulder is a condition with a gradual onset because of repetitive hobby and may be labeled as microtrauma and macrotrauma, the etiology of microtrauma is multifactorial and may be due to intrinsic elements or extrinsic elements. (Tovin B et al. 2006).

Intrinsic Factors Swimmer's shoulder usually offers as subacromial impingement concerning the rotator cuff tendon, bicipital tendon, or subacromial bursa.

Primary subacromial impingement involves compression of those systems between the acromion and more tuberosity. The purpose of number one impingement is usually a tight posterior pill or bizarre acromial morphology.

Secondary impingement takes place via a series of impairments, usually starting up in a swimmer with accelerated anterior glenohumeral laxity. (Tovin B et al. 2006).

Extrinsic Factor microtrauma is because of overuse. Overuse in sports is appearing a mission with a frequency that doesn't allow the tissues to get better and signs and symptoms can be because of loss of muscle power or persistence.

1. 3.Clinical Presentation

1.3.1 Common Medical Issues

1.3.2 Acute Injuries

- (i) Acute shoulder subluxation can arise in swimmers with underlying shoulder laxity.
- (ii) Patellar subluxation can arise in people with underlying generalized laxity meniscus tear in an older athlete may be exacerbated
- (iii) Acute onset of back ache can occur in swimmers. The repetitive hyperextension may additionally cause spondylolysis. (Khodae M et al. 2016).

1.4 Musculo-skeleton Conditions

- Shoulder ache is the maximum common in swimmers because of overuse. . A multitude of problems make contributions to the "swimmer's shoulder": a hypermobile glenohumeral joint combined with method flaws or fatigue can lead to impingement of the rotator cuff. Microtears or stretching of the glenohumeral ligaments exacerbate static instability .
- Hip and Groin Breaststroke, a ways greater normally than other competitive swimming strokes, can cause quite a few hip and groin lines and accidents. Adductor pressure, iliopsoas strains, and sports activities hernias .
- Knee Up to seventy five % of breaststrokes file medial knee pain. Medial knee ache can arise from pressure on the medial collateral ligament, infection of a medial plica, or, in unusual instances, medial meniscus tears.
- Lumbar Spine modern-day swimming approach can lead to pars interarticularis pathologies (e.g., spondylolysis). The L5-S1 disc is any other not unusual location of inflammation with overuse. (Khodae M et al. 2016).

1.5 Miscellaneous Medical Conditions

Skin Problems in Open Water Swimmers problems in open water swimmer. Sunburn is perhaps the most commonplace environmental pores and skin problem in any organization of athletes Page 1 of 2 Source constantly exposed to ultraviolet light (UVL) radiation.

2. INVESTIGATION

Diagnostic imaging Imaging can help evaluate various anatomic abnormalities that could be present in patients.(Bishop M et al. 2022).Computed tomography (CT) scan may be

warranted if bony defects are present. Magnetic resonance imaging (MRI) allows for clearer visualization of the soft tissue anatomy of the shoulder. Ultrasound is a useful tool in the rapid management of shoulder modification of the players. Moreover, US is low cost and very helpful tool to be used in everyday practice in sport medicine. (Galluccio F et al. 2017). Pain assessment Visual analog pain scales were used to assess pain.

ROM Assessment Painless active ROM (flexion, abduction, internal rotation, and external rotation) was measured in the shoulder joint using the goniometer. (Mehrpour Z et al . 2020). Muscle power of the shoulder girdle was examined in each direction when performing the motions of abduction, adduction, flexion and extension. Special Tests Special tests for joint instability and impingement also need to be included in the evaluation. Tests for impingement include the Neer impingement test and the Hawkin's test. (Delbridge A et al.2017).

3 .REHABILITATION

- TENS is normally used at the end of treatment to relieve an affected person of ache from their damage and reduces pain notion for patients with shoulder ache. (Morgan K2017). Tens application at high frequency (100 HZ) with a pulse period 120µ and 10w intensity (30-40 ma) for 10min has enormous role in decreasing pain degree and practical disability. (Mishra, 2020)
- Kinesio taping KT has become an critical part of shoulder ache as a result of an extended duration of swimming, (Jaroń A et al.2021) Cryotherapy cryotherapy subjects said a great reduction in frequency and depth of pain, as well as much less ache at some stage in shoulder rehabilitation, (Zedan A et al. 2022).
- Aquatherapy The advantage of water-based, openchain, UE exercising is the trunk muscle cocontraction. Arm movement through the water has a tendency to sell stability and stability.
- Yoga Incorporating yoga in a schooling routine may also assist a swimmer to control and be aware about their frame and to enhance their respiration coordination at the same time as additionally growing normal energy. (Haddad M et al. 2021).
- Acupuncture It is a healing opportunity for shoulder impingement syndrome, continual shoulder ache. It can mobilize nice factors inside the body to strengthen anti-infection, boom analgesic and antishock results, and relieve spasms Cupping In the 2016 Olympic Games, marks of blood stasis on the returned of swimmer Michael Phelps won attention, cupping hastens muscle excretion, which is useful for emergency remedy of acute injuries.(Zhang Het al 2022).
- Dry needlingdry needling is commonly used y used to reduce myofascial ache because of cause factors. Three muscle tissues are the maximum commonplace muscles with cause factors that cause shoulder ache. (Morgan K 2017)
- The rehabilitation protocol became divided into four phases, totaling 24 classes of physical therapy with a frequency of 3 times a week (Allegrucci et al., 1994). The initial aim became to reduce the signs and symptoms, after this segment, sports to increase strength, stability and practical ability have been executed. Page 1 of 2 (Almeida G et al. 2011).

3.1 Phase Wise Treatment for Swimmer's Shoulder

3.1.1 Phase I (1st to 4th session)

Initially, myofascial release and trigger point inhibition were achieved (Vernon and Schneider, 2009). The shoulder mobilization strategies were accomplished. Isometric strengthening paintings changed into started for the rotator cuff and posterior depression

of the scapula, strengthening expanded in step with the potential to perform the workout without pain.

3.1.2 Phase II (fifth to 13th session)

Exercises for the strengthening of the dynamic stabilizers of the scapulothoracic and glenohumeral joints, stretching, core stability physical activities, proprioception and aerobic conditioning were emphasised.

3.1.3 Phase III (14th to 20th consultation)

Functional swim movement training became carried out. At the give up of this segment, the affected person reported no shoulder pain.

3.1.4 Phase IV (21st to 24th consultation)

This section involved the go back to the sport. The stretching, plyometric, sensory-motor and functional exercises remained on this segment. At the give up of rehabilitation, the athlete became capable of go back to her sport activities on the pre-injury degree. (Almeida G et al. 2011).

4. CONCLUSION

This Systemic review highlights important risk factors for swimmer shoulder in athletes. Prevention is an existing topic, but the small numbers of prospective studies published on this topic in the literature and the variability of the quality of the studies included in this systemic review show that risk factors of swimmer shoulder injuries are still not completely demonstrated. In my review of literature, we included the risk factors causing swimmer's shoulder disease through investigation and searched the rehabilitation to treat the condition. In swimmer Shoulder patient rehabilitation is more effective than pharmacological or surgical treatment as it can cure the problem without any harmful effect and reduce the symptom with exercise.

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