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Injury patterns in sports-related knee and shoulder injuries in Wrestlers from Haryana Practicing in Government Academies

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Abstract- Wrestling is an Olympic sport for both men and women. It is so ancient since 708 B. C. It is a combat sports that results in various types of injuries that occur in sports. Wrestling and football, which involve frequent player-to-player contact, have a high risk of shoulder injuries. Furthermore, wrestling involves constant contact with the playing surface, exacerbating the condition According to research from the Center for damage and Policy, football and wrestling are the two sports with the highest risk of major damage to athletes. Aim of this study is to know about injury patterns in sports-related knee and shoulder injuries in wrestlers from Haryana practicing in Government Academies. Data has been collected through off line structured questionnaire of wrestlers and coaches of Government Academies of Haryana State. Sample size for the collection of the data has been collected from the total 551 respondents (wrestlers) on the basis of exclusion and inclusion criteria. In our study population, 40 out of 551 players (7.25%) who experienced shoulder injuries and 77 out of 551 (13.97%) who experienced Knee injuries. In our study, 7.25% of participants reported shoulder injuries.

Keywords: Wrestling, injury patterns, Knee injuries, Shoulder injuries, Government Academies, Haryana.

I. INTRODUCTION

Wrestling is an Olympic sport for both men and women. In this sport, wrestlers can use their legs for offensive and defensive maneuvers. Catch-as-catch-can wrestling, a style where pinning and throwing an opponent to the mat is the primary objective, is where the sport initially gained prominence. The significance of sports in fostering development is increasingly recognized today. According to Singh (2018), "Every human being has a fundamental right of access to physical education and sport, which are essential for the full development of his personality." The "UNESCO 1978 International Charter of Physical Education and Sport" offers this claim.

Records of ancient Olympic wrestling date back to the Greeks in 708 B.C., and wrestling's beginnings can be found in the Sumerians as early as 5000 B.C. (Comstock RD, Knox C, et al. 2006) Since then, wrestling has developed into a variety of forms that are practiced all over the world. The main styles are freestyle, Greco-Roman, and folkstyle. The majority of athletes in the United States (U.S.) compete in folkstyle, which includes younger athletes in youth programs as well as middle school and high school interscholastic wrestling teams. (Boden B P, Lin W, et al 2002)

Young athletes are more vulnerable to major injuries, such as brain damage, lasting debilitation from fractures, and infrequently, death (Boden B P, Lin W, et al 2002, Boden BP, Jarvis et al 2008, Halloran L 2008, Hewett T E, Pasque C et al 2005, Luckstead E F, Patel D R 2002). Many of these injuries can be classified as significant or catastrophic, meaning that wrestlers will often need emergency care. Depending on the diagnosis, some injuries might require surgery or inpatient care (Boden B P, Lin W, et al 2002, Boden B P, Jarvis et al 2008, Halloran L 2008, Yang J, Peek-Asa C, et al 2007. Additionally, wrestling's particular physical demands and limb postures can result in uncommon but significant injuries that have been documented in the medical literature. (Devgan L L, Gill H S, et al 2006, Giombini A, Di Cesare A et al 2003, Johnson R. 2006, .Ozcakar L, Erol O, et al 2003)

In ancient India, the king ensured that wrestlers had a balanced diet of milk, beats, sweets, sugar, and

exquisite desserts despite the ruling elite's frequent mockery of them. Wrestlers used to work out constantly to maintain their health and quality of life. Wrestling was popularized and sanctioned by British authorities in India, allowing its practitioners to join the military. Both Indian warriors and British military personnel create readiness plans. As a result, wrestling became a popular sport in India, and the country is now ranked in the top ten in the world. Not until the 1960s did things start to change. In 1967, India hosted the World Wrestling Championships in New Delhi.

According to research from the Center for damage and Policy, football and wrestling are the two sports with the highest risk of major damage to athletes. (Akbarnejad A, Sayyah M 2012). According to a research by Powell et al., the largest proportion of injuries for which a player missed more than 7 days was in baseball (31.0%) and wrestling (32.6%), with the lowest numbers in field hockey (20.4%) and softball (22.9%) (V Boden BP, Lin W et al 2002) Wrestling injuries to the knee and shoulder joints are the most common. (Boden BP, Jarvis CG et al 2008, Halloran L 2008). So this study is very important to be carried out

AIM OF THE STUDY

Aim of this study is to know about injury patterns in sports-related knee and shoulder injuries in wrestlers from Haryana practicing in Government Academies

III. MATERIAL AND METHODS

Data has been collected through off line structured questionnaire of wrestlers and coaches of Government Academies of Haryana State. Sample size for the collection of the data has been collected from the total 551 respondents (wrestlers) on the basis of exclusion and inclusion criteria.

Sample:

Number of Subjects- 551 wrestlers were chosen from all Government Academies of Haryana that were inpatients at their concerned academies were chosen that were recruited in the Government Academies of Haryana.

- Sample Population- wrestlers
- Sample Design- Survey
- Source of Collection- Government Academies of Haryana State
- Method of Data Collection- The study subjects were wrestlers of Haryana State who were inpatient in government academies. The questionnaires were prepared and filled by both the wrestlers as well as coaches of Haryana for the study according to the objectives as per ethical principles of the research.

The questionnaire was filled with the 30 Government Wrestling Academies with Wrestlers practicing in concerned academies.

Inclusion Criteria

- All subjects should be admitted in Government academies of Haryana for more than one year.
- All subjects should be wrestlers.

Exclusion Criteria

- Subjects should be admitted in Government academies of Haryana for less than one year.
- Subjects that were practicing in private academies.
- Subjects that were practicing in another state rather than Haryana.

VARIABLES OF THE STUDY

Variables in research can be categorized into two main types:

Independent variables - Government Wrestling academies of Haryana

Dependent Variables - Injury patterns in sports-related knee and shoulder injuries in Wrestlers

Method of assigning Subjects

Subjects were assigned to survey group randomly.

The study is a Survey design in which self-prepared questionnaire is prepared according
to aims and objectives of the study which was filled by both wrestlers and coaches of
Government Academies of Haryana.

SAMPLING DESIGN

The study is a Survey design in which self-prepared questionnaire is prepared according to aims and objectives of the study which was filled by wrestlers of Government Academies of Haryana.

DATA ANALYSIS

The score was calculated in terms of frequency and % in order to assess the data.

All data was evaluated statistically using the SPSS 10.00 software package.

Five hundred fifty one subjects were used in this study who were wrestlers and coaches between the age group of 13 to 20 years (wrestlers) and coaches from All Government Academies of Haryana State. All subjects were admitted and practicing in Government Academies for one year or more.

Demographic data of the respondents have been collected through a self-structured questionnaire.

Variables	Opts	Percentage	Frequency
Age	Upto 12 Years	9.25%	51
	13-18 Years	72.59%	400
	19-23 Years	18.14%	100

Variables	Opts	Percentage	Frequency
Gender	Male	64.42%	355
	Female	35.57%	196

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Patterns of Knee and Shoulder injuries occurred in Wrestlers in last 5 years

Medial Meniscus	5	(5/77) 6.49%
Lateral Meniscus	7	(7/77) 9.09 %
Anterior Cruciate Ligament	8	(8/77) 10.38 %
Posterior Cruciate Ligament	2	(2/77) 2.59 %
Medial Collateral Ligament	5	(5/77) 6.49%
Lateral Collateral Ligament	3	(3/77) 3.89%
Effusion	9	(9/77) 11.68%
Bone Contusion	9	(9/77) 11.68%
Strains	14	(14/77) 18.18%
Cartilage lesions	2	(2/77) 2.59%
Prepatellar bursitis	13	(13/77) 16.88%

SHOULDER LESIONS (N=40)

Sprain/Tears (muscular and ligamentous)	15	(15/40) 37.5%
Contusion	4	(4/40) 10%
Bursitis	2	(2/40) 5%
Tendinosis	1	(1/40) 2.5%
Fracture	2	(2/40) 5%
Bony Bankart	3	(3/40) 7.5%
Bankart	5	(5/40)12.5%
Hill Sachs'	1	(1/40) 2.5%
SLAP-1	1	(1/40) 2.5%
ALPSA	1	(1/40) 2.5%
Gird	1	(1/40) 2.5%
Perthes	1	(1/40) 2.5%

III. RESULT AND DISCUSSION

Sports injuries occur owing to several risk factors interacting at the same time (Requa RK (1991)). Sports injuries occur when different risk variables interact at the same time(Powell JW (1991)). Injuries vary greatly amongst sports, and particular injury patterns have been identified in different sports. This injury pattern is connected to the varying degrees of risk factors associated with various sports (Taimela S, Kujala UM, et al 1990). Wrestling and football, which involve frequent player-to-player contact, have a high risk of shoulder injuries. Furthermore, wrestling involves constant contact with the playing surface, exacerbating the condition.

Even though there is no player-to-player contact in baseball, softball, or volleyball, similar injuries are still common in these sports. Continuous stress on the shoulder as a result of repetitive movements contribute to a high injury rate in volleyball, softball, and baseball (DahmDL and LajamCM (2002)). Wrestling and football need regular player-to-player contact and so have a high incidence of shoulder injuries. Furthermore, wrestling causes constant contact with the playing surface, exacerbating the

condition. Even though there is no player-to-player contact in baseball, softball, or volleyball, similar injuries are still common in these sports. Continuous stress on the shoulder as a result of repetitive movements contribute to a high injury rate in volleyball, softball, and baseball (Hewett TE, Pasque C et al 2005). In our study population, 40 out of 551 players (7.25%) who experienced shoulder injuries and 77 out of 551 (13.97%) who experienced Knee injuries. In our study, 7.25% of participants reported shoulder injuries. shoulder injuries came in second. Percentage of shoulder injuries has been documented in the range of 3.5-24% of wrestling injuries in the School boys and girls population, and come second only to injuries occurring at the knee (Hewett TE, Pasque C et al 2005, LorishTR, RizzoTD Jr, et al 1992).

The meta-analysis conducted by Hwett et al. found that the exposure-based injury rates for pediatric wrestling injuries ranged from 6.0 to 7.6 injuries per 1,000 athletic exposures. Age, experience, and degree of activity all raised the risk of injury. The head/spine/trunk had the highest frequency of injuries, followed by the upper and lower extremities. Hewett TE, Pasque C et al 2005, Requa RK 1991 studied the most frequently damaged areas were the vertebral column and trunk (34%, 60/176) in four high schools over a two-year period, followed by the lower part of the body (33%, 58/176) and upper extremities (29%, 51/176). LorishTR, RizzoTD Jr, et al, 1992 documented

The sorts of injuries in teenage and preadolescent boys in two significant wrestling competitions and discovered that the primary locations affected were the upper extremities (33%, 73/221 injuries), neck, and back (24%, 53/221). Furthermore, it was noted that older wrestlers and possibly larger wrestlers were more likely to sustain injuries. Wrestling stances frequently expose the head and face to harm. In extremities, the knee, shoulder, and ankle joints are said to be the most frequently involved (Jarret GJ, Orwin JF 1998). The use of legs in FS and hands and arms in GR as per rules may make these wrestlers more susceptible to lower and upper extremity injuries, respectively (Bruce DA, Schut L, et al 1984). In our study population, higher injuries occurred among wrestlers who practiced freestyle wrestling. Another study by Ngom et al. on children in Dakar discovered that the limbs were more damaged, particularly the upper limbs. The elbow joint sustained the majority of injuries, followed by the forearm and shoulder. Fractures were most frequently discovered, followed by contusions and dislocations (Ngom G, Mohamed AS, et al, 2017). In our investigation, this was not the case. In general, knee injuries were the most frequent, followed by shoulder injuries. Sprains and strains were the most prevalent injury, followed by contusions. Otero et al. also discovered that injuries to the shoulder were among the top four locations affected, resulting in missed time or surgery (Otero JE, Graves CM, et al 2017).

Every sport has a unique injury profile and level of risk, and injuries differ greatly between sports (Taimela S, Kujala UM, et al 1990). The lower extremities is traditionally the most usually injured part in wrestling, with the knee leading the way, followed by the ankle. These injuries frequently necessitate surgery and are typically season-ending. Prepatellar bursitis is a frequent knee injury that is mostly associated with wrestling. (Strauss RH, Lanese RR. 1982, Mysnyk MC, Wroble RR, et al 1986).

In prospective studies, knee injuries have ranged from 7.6 to 44% of all wrestling injuries (Strauss RH, Lanese RR 1982, Hewett TE, Pasque C, et al. 2005). In the only study where the percentage of knee injuries was less than 10%, Lorish et al. reported injuries sustained by wrestlers between the ages of 6 and 16 during competitions (Lorish TR, Rizzo TD, et al 1992). In our analysis, knee injuries accounted for 13.97% of all reported injuries. These wounds are often rather serious. Over an 11-year span in NCAA wrestling, 65% of injuries requiring surgery were to the knee. In the same study, 21% of injuries resulting in more than a week's absence from competition concerned the knee (Jarret GJ, Orwin JF et al 1998 Barroso BG, Silva JMA, et al 2011).

Barroso et al. discovered that the knee (25.5%) had the most lesions, followed by the shoulder (20%) (Barroso BG, Silva JMA, et al. 2011). In a research by Pasque et al. (Pasque CB, Hewett TE. 2000), the

shoulder was the most common site of injury (24%), followed by the knee (17%). Wroble et al. (Wroble RR, Mysnyk MC, et al 1986) found that wrestlers who had previously sustained knee injuries were more likely to sustain another injury.

In their study, Barroso et al. discovered that 77% of all injuries were acute (new injuries), 10% were recurrent, 2% were unresolved injuries from the previous year, and 1% were caused by a recent worsening of an unresolved injury. In our analysis, 28.16% of knee injuries were recurring, compared to 71.83% of new injuries.

Sprains account for between thirty and sixty-five percent of all knee injuries. Meniscal injuries are also common, with a reasonably high proportion of lateral to medial tears (Hewett TE, Pasque C, et al 2005). Wroble et al. found that the most common knee injuries were prepatellar bursitis, lateral and medial collateral ligament sprains, and meniscal tears. The highest rates of sprains (23.37%) and strains (18.18%) of muscles and ligaments were also seen in our study.

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There are no widely recognized standards for determining how serious a sports injury is (Jarret GJ, Orwin JF, 1998). The requirement for surgical therapy was employed as a severity criterion by Barroso et al. (Barroso BG, Silva JMA, et al 2011). In their study on wrestling players, 13 (9%) lesions were operated on, the majority of which were in the knee. (Agel J, Ransone J, 2003) and Wroble et al. ,Wroble RR, Mysnyk MC, et al 1983) found that the majority of surgically treated lesions in wrestling athletes occurred in the knee. In our study, ten wrestlers required operational intervention, nine of which were for knee injuries.

According to Wroble et al., there were 11.5 knee injuries per 100 wrestlers per year that required a week or more of time off (Wroble RR, Mysnyk MC, et al 1983). According to Pasque et al. (Pasque CB, Hewett TE. 2000), the average amount of time lost due to an injury was five days, with a range of one to thirty-nine days. In our analysis, there were 18.11 knee injuries per 100 wrestlers annually that resulted in a week or more of missed time in competitions as well as in practice sessions also.

Limitations/Weakness of Our Study

This study is limited to Haryana only. Hence, we kept the study very simple. In spite of that we observed the following during the course of this study:

- Ignorance of study population and trainers who practice in Private academies persist in treating injuries according to traditional methods.
- Ignorance about importance of reporting injuries/ avoidance to continue practicing.
- Lack of proper follow up to continue playing in competitions.

IV. CONCLUSION

The best way to minimize injuries to the athletes is by developing a well-designed and operational injury prevention program by consistently and professionally evaluating the injury patterns and ensure availability of physiotherapists during competitions and practice so that proper treatment could be given to athletes which can boost their play life and performance in their athletic career. Even though not all injuries can be avoided, the best way to minimize them is by well defined injury prevention strategies. The aim of our study was to understand the variables leading to injuries in the Indian wrestlers.

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