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Opinion
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Prevlance of Musculoskeletal Problem Among Female Throwball Players

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Abstract

Background: Throw ball is popular women's team sports that indicates a need for repetitive overhead throwing sudden directional changes jumping and high velocity acceleration –deceleration movements. These sports has specific physical requirement increase the risk of my skeletal problem, specifically among young female athletes. Even in the presence of growing participation women in throw ball, there is restricted literature addressing the prevalence of my skeletal problems in this population.

Objectives: To evaluate the prevalence and proportion of my skeletal problems among female throw ball players aged 19-21 years with a minimum playing experience 2 years.

Methodology: A cross sectional observational study was carried out among female throw ball players aged between 19-21 years who had at least 2 years of playing experience. Participation were selected using practically sampling. My skeletal problems were assessed using a standardized self-reported questionnaire such as Nordic musculoskeletal questionnaire. Along with structured population characteristic and the sports participation profile. Data were analysed using narrative statics; add the prevalence of myoskeletal problem was expressed in percentage.

Result: The study demonstrated highly prevalence of myoskeletal problems among female throw ball players. The most commonly affected region where the shoulder, Elbow, Upper back and lower back. Players with increased exercise frequency and extended practice duration reported a higher prevalence of symptoms. Repetitive strain related myoskeetal problems were more commonly reported compared to acute injuries.

Conclusion: Myoskeletal problems are frequently occurring among female throw ball players aged 19-21 years with minimum of 2 years of playing experiences. The shoulder elbow upper and lower back are most commonly affected. These findings reinforce the importance of applying preventive physiotherapy treatment, sports specific conditioning programs, and yearly assessment strategies to reduce my skeletal problems and improve performance among the female throw ball players.

Keywords: Thruway; Myoskeletal Problems Female Athletes; Prevalence; Sports Injuries

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Introduction

It is a non- contact sports known as throw ball-it is a thriving competitive sports especially among young women at schools, collages etc. For many of them the game is not a competitiveness but also identity, team work, dedication and empowerment t. It requires shoulder strength to create a force during overhead throwing and in serves. They may face challenges related to shoulder strength due to difference in muscle mass and upper body strength compared to men.

Sports are admiring for their ability to uplift the teamwork, discipline and physical excellence, but they also carry burden and facing struggles in their body. Musculoskeletal problems which include an, injuries, and impairments involving muscles, joint, ligaments, tendon and their supporting structure. These are due to the repetitive movement, high velocity actions, and sudden changes in direction. For athletes such problem does not remain abstract; they directly affect training consistency, performance quality and long term health.

Throw ball is a fast paced team game like volleyball, basketball specially popular among women in india. It has a unique rules and style of play, frequently they used to do jumping, overhead

throwing, changing in a direction, side moving and pivoting This causes stress on upper limb and trunk particularly shoulder. The sorts enjoy widespread participation at collages, schools and national levels. Epidemiological data on musculoskeletal symptoms among throw ball layers are limited this gap is due to without clear guidance on prevention and management strategies.

In recent years, the participation of women in competitive sports has grown significantly, particularly in India. This increase the research to explore specific injury pattern, recognizing the athletes may experience musculoskeletal problem due to physiological, biomechanical and training related factors. Acknowledging that behind every data point is a young women balancing, training, and competition while quietly enduring pain that limit their sorting career.

The sports demand constant overhead throwing, catching, sudden jumps, and alternate changes in a direction. These movement, repeated over hours of practice and matches, put over stress on muscle and joint. Female throw ball players often pushes through pain perform, but this persistence can make them harmful to injuries ranging from impingement and rotator cuff strain, low back pain, elbow strain, knee problems and ankle sprain. The sport demands constant overhead throwing, catching, sudden jumps, and rapid changes in direction. Despite being a non- contact sport, throw ball puts female players at risk for musculoskeletal injuries. These movements, repeated over hours of practice and matches, put vast stress on the muscles and joints.

Research tells us women in other overhead sports like volleyball, handball, and tennis shows similar patterns of musculoskeletal issues. Factors such as lower baseline upper –limb strength, greater joint laxity, hormonal influence on ligament and decrease the core stability explains why female athletes are at high risk compared to men. However, when it comes to throw ball specifically, studies are still scare. The few reports available already highlight concerned: shoulder pain, neck stiffness, and knee and ankle strain are becoming common complaints among female throw ball players. Recent epidemiology literature highlights the female athletes demonstrate unique injury pattern due to factors such as reduced muscle strength relative to joint load, hormonal influence, biomechanical difference and training exposure. These findings are relevant to throw ball, as the sports involves prolonged and repetitive throwing action and postures that may predispose players to cumulative micro trauma and overuse syndrome.

Added to biomechanical demands, inadequate conditioning, improper throwing techniques, limited recovery periods, and lack of structured injury-prevention program further it increases the risk of musculoskeletal problems.

By acknowledge the prevalence of musculoskeletal problem among the throw ball players is important for early identification of risk factors and planning for effective and preventive rehabilitative physiotherapy strategies. Data contribute to improve performance, reduced injury burden, and long term musculoskeletal wellbeing in this growing players. The nature of throw ball training and competition often involves prolonged practice session.

In many developing sporting environments, schools, collages levels female throw ball players they may not receive proper guidance, on warm up protocol, muscle strengthening, flexibility training, or load management. This overuse injuries and chronic musculoskeletal complaints rather than acute traumatic injuries. Repetitive strain to shoulder complex, poor core stability and false landing mechanism may cause pain and functional limitation if not identified early.

Evidence from recent studies in female team highlights the importance of early identification to prevent the progressing of the condition. Due to pain they may alter the movement pattern, reduced joint efficiency, and increase risk of secondary injuries. Unresolved musculoskeletal problems can negatively affect throwing accuracy, agility, endurance, and overall game performance.

A recent study by THILAGAM addresses this gap by assessing musculoskeletal problem among female throw ball airs aged between 18-25 years using the Nordic questionnaire method (NMQ). This findings were: shoulder pain is the main complaints due to repetitive activities. Upper back (50%) Neck pain (46%), stress on spinal and cervical structures during rapid directional changes and prolonged posture.in addition such as lower back, Hip\thighs and ankle /feet's shows low but still notable.

These tell a deep story. They represent players who apply ice after practice, who struggle to sleep because of upper back discomfort and who adapt their playing style to cope with long term neck pain. it is not by data based, it's lived with experience. Trainings, targeted strengthening and structured warm up routine are not optional. They are essential for sustaining performance and protecting long term musculoskeletal health.

Ultimately the study highlights the shoulder is the main area to get strain. While also drawing attention to secondary regions that deserves clinical focus. For physiotherapist, coaches, and sports scientist these provide a foundation or designing intervention that Rae both evidence based and empathetic. Protecting athlete's health means enabling them to purse their passion without sacrificing their bodies.

Recent research in female sports participation also features that musculoskeletal pain is frequently reported by the players, as it is often perceived as a normal consequences of training. This reporting an appropriate intervention, leading to progression, from mild to moderate discomfort. Chronic pain can negatively influence layers performance, participation level, psychological wellbeing and long term adherence to physical activity. In female athletes, these concerns are particularly important due to higher rate associated with injuries and pain.

Additional, the competitive demands of throw ball have increased in recent years, with more tournaments and intensified training schedule. This exposure without proportional emphasis on recovery strategies such as rest, stretching and conditioning may predispose players to cumulative musculoskeletal stress.

Therefore conducting prevalence based study n musculoskeletal problems female throw ball players understanding the magnitude issue. Such research helps in identifying high risk and anatomical guide the development of preventive physiotherapy protocol, training modification and awareness programme.

Therefore, exploring musculoskeletal problems among female throw ball players is not only relevant for injury prevention but also plays a key role in promoting safe participation, optimizing performance, and enhancing the overall quality of life of female athletes.

Need for the Study: Need of the study is to identify the prevalence

of musculoskeletal problem among female throw ball players.

Aim of the Study

- Aim of study is to know about the prevalence of musculoskeletal problem in female throw ball players.
- I need to provide well-structured aims that incorporate current evidence from relevant sports. The main motto is to make it specific and evidence based.

Objectives of the Study

- The goal is to find out the musculoskeletal problem of the throw ball players. The prevalence of this study based on the anatomical region, type of injuries, history of previous injury, warm up practice pre session and post session.

Hypothesis

Null Hypothesis

There is no significant correlation of upper and lower limb musculoskeletal problem among female throw ball players.

Alternative Hypothesis

There is a significant correlation of upper and lower limb musculoskeletal problem among female throw ball players.

Reviewe of Literature

Prevalence of musculoskeletal problems among female throw ball players

2025

Ravenna Thilagam, Murugaraj. T, Shanmugananth Elayaperumal

In a recent 2025 study, researchers set out to understand how female throw ball players are affected by musculoskeletal problems—those aches, pains, and injuries that can come from the intense physical demands of the sport. Using a well-known survey tool called the Nordic Musculoskeletal Questionnaire, they asked players to report any discomfort they felt in different parts of their bodies. Unsurprisingly, the shoulders lower back, and knees came up often—areas that take a beating from all the jumping, throwing, and sudden movements in throw ball. While the study gives valuable insight, it wasn't without its limitations. The data was self-reported, meaning players described their own symptoms, which can sometimes be influenced by memory or personal interpretation. Plus, the sample size was relatively small, so the findings might not apply to all female throw ball athletes. Still, the research highlights a clear need for better injury prevention and recovery strategies tailored to this fast-paced sport.

Prevalence of balance in female throws ball athletes

2021

Syed merman hangnail

In 2021, a team of researchers set out to understand how well female throw ball athletes maintain their balance—a crucial skill in a fast-paced sport like throw ball. They studied 100 young women, aged 13 to 25, from three private institutes in Karachi, using a tool called the Balance Error Scoring System (BESS). This method involved testing the athletes in different stances, like standing on one leg or in a heel-to-toe position, to measure how steady they were. The results showed that while most players had decent balance, there were noticeable differences depending on age and training levels. However, the study had its limits: the sample size was small, the age range was narrow, and the balance test didn't fully reflect the dynamic movements of actual gameplay. So while the findings offer useful insights, they also highlight the need for broader, more detailed research in the future.

Prevalence of sports injury in Para athletes-retrospective cohort study

2024

Exalt Garcia Carrillo, burn shah

This study took a closer look at the kinds of injuries Para athletics throwers often face, using past medical records and athlete reports to piece together the bigger picture. It found that injuries to the shoulders, elbows, and lower back were especially common—no surprise given the intense, repetitive motions involved in throwing events. The researchers emphasized the need for injury prevention strategies tailored to the unique demands of Para athletes. Still, the study had its challenges: because it looked backward in time, it relied on memory and existing records, which aren't always perfect. Plus, the group of athletes studied wasn't very diverse, and the definitions of "injury" varied, making it harder to compare results across the board. All in all, it's a valuable step forward, but there's room for deeper, more detailed research.

Shoulder injuries in the overhead throwing athletes

2017

Sean Woo, Hoeing Mulch, Michael L. Richardson, Felix S. Chew, et al.

This 2017 article dives into the kinds of shoulder and elbow injuries that often plague athletes who rely on overhead throwing—think baseball pitchers, javelin throwers, or volleyball players. These athletes put a lot of stress on their joints, and the study highlights common issues like rotator cuff tears, labra damage, and internal impingement. To diagnose these injuries, doctors typically use imaging tools like MRIs and ultrasounds, which help them, see what's going on beneath the surface. But the study isn't without its limitations: it leans heavily on imaging, which might miss early-stage or functional problems and it doesn't track how athletes recover over time. So while it's a solid resource for understanding the anatomy of throwing injuries, it also points to the need for more hands-on, long-term research that looks beyond just the scans.

Shoulder injuries in overhead –throwing athlete's epidemiology, mechanism of injury, imagining studies

2018

Lin DJ, Wong TT, and Kazak JK:

This 2017 review explores why shoulder injuries are so common in athletes who perform repetitive overhead motions—like baseball pitchers, volleyball players, and javelin throwers. The authors break it down into three parts: how often these injuries occur (epidemiology), how they happen (mechanism), and how they're diagnosed (imaging). They explain that the shoulder undergoes extreme stress during the late cocking and acceleration phases of throwing, often leading to issues like rotator cuff tears, labra damage, and internal impingement. To study these injuries, the authors relied on advanced imaging tools—mainly **MRI** and **ultrasound**—to visualize structural

damage and guide diagnosis. Their methodology involved reviewing clinical cases and imaging findings to map out common injury patterns. However, the study has its limitations: it's a narrative review, so it doesn't include new experimental data, and it focuses heavily on imaging, which may miss functional deficits or early-stage problems. Despite these constraints, the article offers a clear, practical framework for understanding and diagnosing shoulder injuries in overhead athletes.

Throwing Shoulder Adaptations Are Not Related to Shoulder Injury or Pain

2024

Emily Struma et al

This study challenges a long-held assumption in sports medicine: those changes in shoulder range of motion (ROM) from repetitive throwing automatically lead to injury or pain. Researchers followed a group of baseball and softball athletes, tracking shoulder adaptations—like increased external rotation or decreased internal rotation—and comparing them to actual injury and pain outcomes. Using tools like **goniometers** for ROM measurements and **prospective cohort methodology**, they found no significant link between these adaptations and shoulder musculoskeletal injuries (MSI) or pain. While the study offers fresh insight, it's still preliminary and comes with limitations: a relatively small sample size, short follow-up period, and focus on a specific athlete population. These factors suggest that while shoulder adaptations may not directly cause injury, more research is needed to fully understand their long-term impact.

Risk factors for shoulder injuries in handball: systemic review

2022

Tselios Hadjisavvas, Michal is A. Efstathiou, Vivian Million

This 2022 review takes a close look at why shoulder injuries are so common in handball players, especially those who spend hours throwing overhead during games and training. The researchers sifted through dozens of studies using trusted databases like PubMed and Scopus, following strict guidelines to make sure they included only high-quality research. They found that factors like repetitive throwing, muscle imbalances, limited shoulder mobility, and not enough recovery time all play a role in increasing injury risk. To uncover these patterns, they used tools like strength tests, motion analysis, and clinical assessments. But the study isn't perfect—it faced challenges like inconsistent definitions of "injury," differences in how each study was designed, and a lack of long-term data. Still, it offers valuable insights and makes a strong case for personalized training and prevention strategies to keep handball players healthy and in the game.

Prevalence, Incidence and Burden of Health Problems across Playing Positions in Elite Male Handball Players: A 45-Week Prospective Cohort Study

2025

Kristina Dole et al.

This 2025 study followed elite male university handball players over 45 weeks to understand how often they experienced injuries and illnesses, how severe those issues were, and whether playing position influenced risk. Using a **prospective cohort design**, researchers collected weekly health data through **standardized questionnaires** and **medical evaluations**, tracking everything from minor aches to serious injuries. They found that shoulder and knee injuries were most common, especially among backcourt players who perform frequent high-impact movements. The study used tools like the **Oslo Sports Trauma Research Centre questionnaire** and **clinical assessments** to measure injury severity and illness burden. However, it faced limitations: self-reported data may be biased, and the study focused only on male athletes, limiting generalizability. Despite these challenges, the research offers valuable insights into how different roles on the court affect health risks—and highlights the need for tailored prevention strategies based on playing position.

Prevalence and Burden of Overuse Injuries in Elite Junior Handball

2018

Chorister Anaheim et al.:

This study followed 145 elite junior male handball players in Norway over a 10-month season to understand how common overuse injuries are and how much they affect performance. Using a **prospective cohort design**, researchers collected data every two weeks through the **Oslo Sports Trauma Research Centre Overuse Injury Questionnaire**, focusing on the shoulder, elbow, lower back, and knee. They found that shoulder injuries were the most frequent and caused the greatest burden, especially among backcourt players who perform repetitive overhead throws. The study's strength lies in its regular, athlete-reported data collection, which captured injuries that might not lead to time off but still impact performance. However, limitations include reliance on self-reported symptoms, which may introduce bias and the focus on male athletes only, limiting broader applicability. Overall, the study highlights the silent toll of overuse injuries in youth handball and the need for early intervention and tailored training programs.

Relationship between selected anthropometric variables and shoulder strength of throw ball players

2025

Tan may Ghost, Mamas Banerjee, Submit Holladay

This study explores how physical traits like height, arm length, and body weight relate to shoulder strength in throw ball players. Conducted in 2025, the researchers selected a group of university-level athletes and measured their anthropometric variables using standard tools like **audiometers**, **weighing scales**, and **measuring tapes**. Shoulder strength was assessed using **manual muscle testing** and **dynamometers**. The methodology involved statistical correlation analysis to determine how these body measurements influenced shoulder performance. Results showed a significant positive relationship between arm length and shoulder strength, suggesting that certain physical attributes may give players a biomechanical advantage. However, the study had limitations: a small sample size, limited geographic scope, and no consideration of training history or injury status. Despite these constraints, the findings offer useful insights for coaches and trainers aiming to optimize performance through tailored conditioning programs.

Design and Methodology

Study Design

This is a cross sectional study.

Study Setting

At devendrar collage of physiotherapy, Tirunelveli

Study Duration

4 weeks of duration.

Sample Size

Totally 50 participants come under this study.

Criteria for Selection

Inclusion Criteria

PROFFESSION: Studying

GENDER: Female

AGE GROUP: 19-21

EXPERIENCE: 2 Years of playing.

Exclusion Criteria

Male throw ball players

Neurological disorder

Recent trauma

Congenital or neurological disorder

Operational Tools

Nordic musculoskeletal questionnaire.

Procedure

A cross sectional study was conducted to identify the prevalence of musculoskeletal problems among the female throw ball players. The study conducted in a devendrar collage of physiotherapy.

Demographic data were collected from the players such as name, age, playing experiences, and practice duration. Adding these musculoskeletal problem also assessed by using a standardized Nordic musculoskeletal Questionnaire which is used to identify the problem in the body regions.

Data Analysis

A Total of 50 college student were approached for participation in this observational cross sectional study. Twenty five participants did not respond. Data from remaining 25 participants were included in the final analysis.

Region Wise Percentage

Region wise percentage=number of players with pain in that region÷25×100.

See Figures and Tables.

Discussion

The present study analysed the prevalence and anatomical proportion of my skeletal problems within in the group of female throw ball players aged between 19-21 years with at least 2 years of playing experiences .Raveena Thilagam, Murugaraj conducted a study prevalence of musculoskeletal problem among female among throw ball players on 2025 they conclude the study the most high prevalence seen in shoulder joint (92%) and minimally seen in a lower back(20)%. They analysis showed a high prevalence of musculoskeletal problems, most commonly affecting the shoulder ,elbow ,upper back and lower back. These results are related with the biomechanical demands of throw ball, which involve continuous overhead throwing, jumping, rapid directional changes and quick acceleration-deceleration movements, all of which place marked stress on both upper and lower extremity. Overuse injuries were more frequent then acute traumatic injury indicating the combined effect of repetitive training and incomplete recover periods. Shoulder problems likely arise from repeated lengthening contraction and shortening contraction loading during throwing while knee and ankle complains associated with jumping, pivoting, and sudden deceleration. LOWER BACK Involvement result from rotational and extension forces during throwing and landing. These findings highlights the importance carrying out a protocol based injury prevention strategies, including focused physiotherapy strength and conditioning programmes, proprioceptive training and load treatment. Additionally yearly

Table 1:

Body Region	Number of players	Prevalence
Neck	10	40%
Shoulder	12	48%
Elbow	7	28%
Hand/Wrist	2	8%
Upper Back	7	28%
Lower Back	5	20%
Hips /Thighs	1	4%
Knee	3	12%
Ankle/foot	3	12%

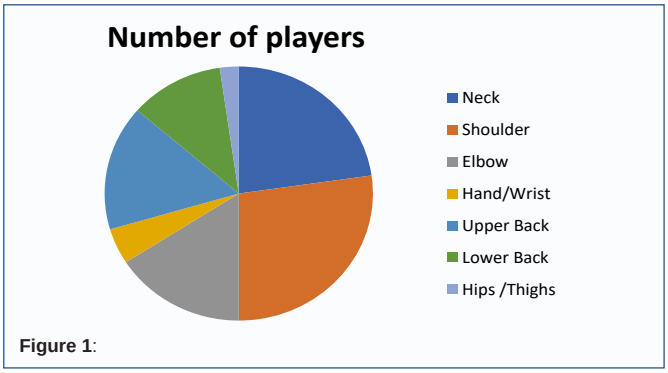


Figure 1:

Table 2:

Body region	No. of players	Percentage
Neck	10	40%
Shoulder	12	48%
Elbow	7	28%
Hand and wrist	2	8%
Upper back	7	28%
Low back	5	20%
Hip thigh	1	4%
Knee	3	12%
Ankle and foot	3	12%
Two categorical variables 1.Body Region 2.PRE score categories Postural Risk Exposure is calculated based on the body region gets affected is divided by total number of players.		

Table 3: Postural Risk Exposure.

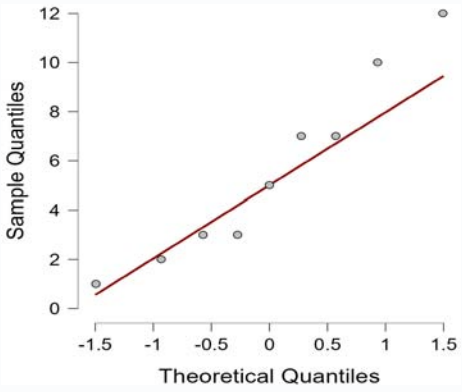
Body Region	Affected players	Risk expsure
Neck	10	0.2%
Shoulder	12	0.24%
Elbow	7	0.14%
Hand,Wrist	2	0.04%
Upper back	7	0.14%
Lower back	5	0.1%
Hips,Thighs	1	0.02%
Knee	3	0.06%
Ankle,Foot	3	0.06%

Table 4:

0.2%	0.24%	0.14%	0.04%	0.14%	0.1%	0.02%	0.06%	0.06%	Total
10	o	0	0	0	0	0	0	0	10
0	12	0	0	0	0	0	0	0	12
0	0	0	0	7	0	0	0	0	7
0	0	0	2	0	0	0	0	0	2
0	0	7	0	0	0	0	0	0	7
0	0	0	0	0	5	0	0	0	5
0	0	0	0	0	0	1	0	0	1
0	0	0	0	0	0	0	3	0	3
0	0	0	0	0	0	0	0	3	3

Chi-Squared Tests

	Value	df	P
X^2	400.00	64	< 0.001
N	50		



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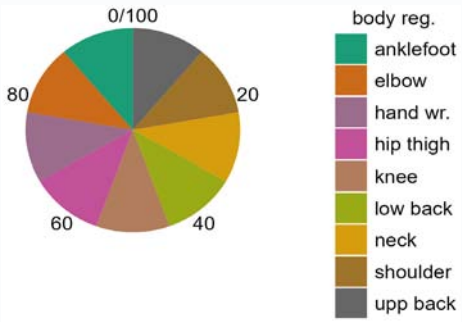

Figure 3: Body Region.

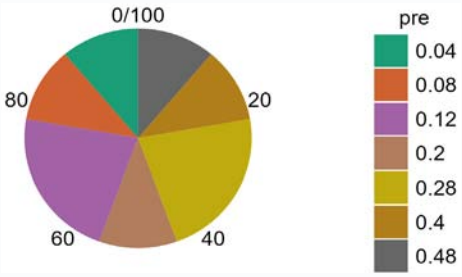

Figure 4: Prevalence.

screening, education of proper biomechanics and recovery strategies are necessary to reduce injury risk, optimize performance, and promote prolonged my skeletal health in female throw ball athletes.

Limitation

This present study has certain limitation.

The sample size was limited to 50 throw ball players, which may restrict the generalizability of the findings to wider population.

Musculoskeletal problem were assessed only using the Nordic musculoskeletal questioner, a self-reported tool, which may be subject to recall bias and reporting error.

No clinical or physical examination was performed to confirm the errors.

Cross sectional study design of the study does not allow determination of a causes and effect relationship between throw ball participation and musculoskeletal problems.

Recommendation

Implement preventive physiotherapy programme targets on shoulder, core, knee, and ankle strengthening, proprioception and flexibility to reduce injury risk.

Introduced structure warm up and cool down routines along with sports specific conditioning to improve performance and minimize overuse injuries.

Conduct longitudinal studies to better understand causal relationship between playing habits any mysoskeletal problems.

Educate athletes on proper biomechanics, load management, and recovery strategies. To maintain prolonged period of myoskeletal health.

Coaches and trainers should adopt regular screening treatment to identify early signs of myoskeletal problems and provide timely intervention.

Conclusion

The study conclude that prevalence of musculoskeletal problem among female throw ball players aged between 19-21 years with 2 years playing experience. Shoulder, elbow, upperback and lower back are most commonly affected area. This is mainly due to overhead throwing, jumping, rapid directional changes and high velocity acceleration-deceleration movement. These findings establish the

need for planned preventive strategies, strengthening program and proper warm up and cool down. Players with greater playing experience and higher training intensity reported an elevated risk of musculoskeletal complaints. Inadequate core strength, poor posture instability uneven playing surface, and improper footwear, may further increase joint and muscular stress.

Prevalence of upper & lower extremity injuries in elite Iranian handball players. — Shows overall injury prevalence among gender groups in handball.

Prevalence, Incidence and Burden of Health Problems across Playing Positions in Elite Male Handball Players: A 45-Week Prospective Cohort Study

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2021

Syed merman hangnail

Future Scope

The finding of this study provide a valuable baseline for understanding musculoskeletal problem among female throw ball players and open several avenues for future research and practical applications. Longitudinal studies can be conducted to examine the progression of musculoskeletal complaints over multiple reasons, providing insight into injury causation and recovery attend. Further research may also investigate the effectiveness of targeted preventive intervention, such as sport specific physiotherapy, core stabilization, proprioceptive training and structured conditioning program, in reducing overuse injuries. Additionally studies incorporating objective clinical assessment, imagining techniques and wearable technology can help in monitoring biomechanical loads and early detection of injury risk. The impact of external factors such as playing surface, footwear, training intensity and recovery strategies can also be explored. Ultimately this knowledge can guide coaches, physiotherapist and sports trainers in developing evidence based training and injury prevention protocols, enhancing the future performance, resilience and career longevity female throw ball athletes while minimizing the risk of chronic musculoskeletal problems.

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