



## The Importance of Exercises in Pickleball Players to Reduce the Risk of Injuries

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### ABSTRACT

Pickleball as a sport has become extremely popular in recent years, especially amongst older adults. This sport is a combination of ping pong, tennis and badminton. Ping pong has demonstrated many health benefits for elder adults especially with low impact activities. Unlike any other sporting activities, it still has the risk of some injuries, especially in elder adults which may include and not limited to ankles, knees, shoulders, elbows, wrists, lower back and hips. The aim for this article is to examine frequently faced injuries in these athletes and discuss the importance of exercising in alleviating some risk for injuries include chronic injuries and acute accidents. By introducing a proper training regime, warm-up and cool down including strength training, flexibility exercises and balance training, risk for injuries can be reduced and may result in improved performance in the sport and other aspects of activities of daily living. These exercises though require proper techniques, proper frequency and intensity and require gradual progression. This is important so that these players can enjoy the sport safely, which may improve physical and social life. They can also be an inspiration for others to join the sport.

**Key words:** Pickleball, Risk of Injuries

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### INTRODUCTION

Pickleball is a fast-growing sporting activity that is a combination of ping pong, tennis and badminton which is not only expanding in the United States but also gaining popularity in the entire world especially amongst elderly adults. Pickleball can be played indoors and outdoors making it easily accessible though out the year. The sport gained popularity not only because of its benefits on cardiovascular health, functional strength improvement, endurance improvements, improved reflexes and eye hand co-ordination but also because of its low impact on joints making it suitable for elder adults trying to stay active but also in a safer environment (Miller et al.,2021). Other benefits the community has found are socialization, inter game interaction, potentially socializing outside the play time. Like other sports, pickleball also comes with the risk of injuries. Research performed by (NIH) shows that commonly faced injuries in pickleball players include ankle and knee joints, followed by elbows, wrists, lower back and hips (NIH, 2020). The American Association of Orthopedic Surgeons report most faced injuries include bursitis or tendinitis of shoulder, elbows and wrist, followed by acute injuries like fracture in these areas (AAOS, 2019).

### COMMON PICKLE INJURIES

#### Lower Body Injuries

#### Ankle and Knee Injuries

Like tennis, badminton and ping pong, which is dynamic, pickle ball also has a dynamic nature with its quick and frequent change of directions, side-to-side shuffles, quick stepping which puts significant strain on the lower body joints including ankles, knees and hips. Stress on these joints makes them stronger with increased bone density but also increases the risk for falls and overuse injuries such as tendinitis and bursitis. Ankle injuries and ligament injuries are also common due to the repetitive and sharp movements associated with pickle ball (Johnson et al., 2022).

**Hip Injuries**

Most elder adults demonstrate hip weakness especially gluteal minimum, Medius and maximus. Due to which they are at a high risk for hip joint and labral injuries. The hip joint undergoes considerable amount of stress during the sudden change of directions including side to side motions and front and back motions. Along with the nature of the game, improper mechanics and overuse can lead to inflammation and chronic injuries requiring rest and may also require surgical intervention in more severe cases (Smith & Wang, 2021).

**Upper Body Injuries****Shoulder Injuries, Elbow and Wrist Injuries**

Upper extremity plays a huge role in pickle ball in co-ordination with the reflexes. These motions include shoulder motion combinations like abduction, external rotation and extension, adduction + internal rotation and with forceful flexion. These motions combine with forceful elbow flexion and extension along with wrist muscle engagement.

Repetitive motions of these muscles lead to shoulder injuries like shoulder impingement, rotator cuff issues, exacerbation of arthritis in the shoulder. Acute fall on an outstretch hand can lead to fractures and rotator cuff tears (Brown et al.,2020).

In the elbow and the wrist commonly faced injuries are tennis or golfer's elbow or medically known as lateral or medial epicondylitis. Wrist strains are also extremely common due to activities including hitting and reaching for the ball while hitting it. Fracture usually occurs in case players run into each other or falls (Thompson & Lee, 2019).

**IMPORTANCE OF EXERCISE IN REDUCING INJURY RISK**

Like all the other sports it is important for athletes to train, warm up before the activity and cool down after the activity. Proper sustained stretching during practice is important and specific drills to improve endurance and skills play a critical role with the sport. These drills can include

- 1) Front and back running in the court.
- 2) Four corner running in the court.
- 3) Practicing various shots by running side to side
- 4) Forward and backward running to improve balance and impact on joints

Many more sports specific and strengthening specific activities can be included. This practice helps with the required muscles normally used during the sport to come to an optimal length tension and the body to have procedural memory during the sport reducing the risk for injuries (Woods, Bishop, & Jones, 2007)

Dynamic stretching before the actual play helps to get the muscles in the optimal length tension and reduce the risk for injuries and warming the muscle up with improve blood supply (Behm & Chaouachi, 2011).

**Key Exercises****Lower Extremity Exercises****Ankle Strengthening and Stability**

Ankle strengthening and stability: This helps target mobility and flexibility around ankle joint (Williams & Anderson, 2018). This also prepares the ankle for quick change of direction and impact activities.

**Balance exercises:**

Single leg standing, use of balance board, rocker board, tandem walking and drills including quick change of directions will help with proprioception and ankle strengthening (Gribble, Hertel, & Plisky, 2012).

**Calf raises and tibialis**

Often times strengthening is overlooked for calf muscles and neglected. The tibialis anterior and calf muscle strengthening not only helps with improved ankle and knee stability, but that stability also adds to improved balance (Hébert-Losier et al., 2010).

Simple exercises like calf raises, toe walks, toe raises, and seated calf raises will help achieve these results.

**Knees and hips strengthening**

Simple day to day exercises like squats, lunges, side lunges, hip abductor and adductor strengthening, bridges will help with overall core and hip stability. This not only helps with strength, muscle endurance, but also helps with pelvic alignment and back pain in these athletes. (Escamilla et al., 1998). Hip stability exercises like bridges help with gluteal muscles and improves stability (Smith and Wang 2021)

These exercises can be performed by using a resistance band for overall hip joint strengthening (Johnson et al.,2022)

**Upper Body Exercises****Shoulder Strengthening and Flexibility**

Rotator cuff plays a role in dynamic stability of the shoulder joint. It is important to strength these muscles as they play a direct correlation with the risk for injuries, scapular stability and overall shoulder mobility. Reduced mobility can make an athlete prone to more injuries. Simple rotator cuff exercises can include resistance training with a resistance band with motions such as external rotation, scapular retraction and depression, external

rotation walk outs. Shoulder complex training can also include thoracic extensions using a bolster. Shoulder flexibility training will help reduce the risk for impingement (Brown et al., 2020)

#### **Elbows and wrist exercises**

Simple dumbbells can be used to perform these exercises. Light weights are preferred to strength the wrist joint muscle due to comparatively smaller muscles (Thompson & Lee, 2019). Other exercises can improve squeezing a stress ball to enhance grip while stretch the forearm extensors and flexors can reduce the risk for tendinitis (William & Anderson, 2018)

#### **Core and stability exercises**

All the hip strengthening exercises also account for core and stability exercises. These are especially helpful to reduce the risk for falls, quick direction changes and overall conditioning for the athlete.

Plank exercises and side planks are used to strengthen the core without too much dynamic motion in the back to reduce the risk for low back pain (Miller et al., 2021)

### **ADDITIONAL CONSIDERATIONS**

#### **Proper Technique and Equipment**

Correct techniques usually encourage proper biomechanic in the body leading to risk for chronic injuries and risk for falls. Proper coaching can result in improved positioning, optimal and much more effective change in positioning during the game, and more experienced feedback to reduce repetitive mistakes.

Use of proper well fitted shoes and paddles which are specifically designed for pickle ball and preferably the light ones can reduce stress on muscles and joints and provide better support and reduce unnecessary strain on the joints (Thompson and Lee, 2019)

#### **Gradual progression and proper rest**

This is important for recovery of the muscles. As mentioned earlier, most of the athletes participating in this sport are elderly adults the recovery times are also more as compared to younger adults. Taking on high intensity activity without going through gradual loading can cause injuries. Rest days can reduce the lactic in the muscle, help it recover better and reduce the risk for injuries (Smith and Wang, 2021).

### **CONCLUSION**

Pickleball can be a great sport for improving active time, socializing, exercising especially in elder adult population and has its benefits in the overall joint and muscle benefits with overall health benefits. But it also puts these athletes at a risk for injuries with can be daunting with the age group engaged with pickleball. By encouraging and introducing sports specific exercises and training addressing balance, strength, endurance risk for injuries can be reduced and the athletes can enjoy the activity for a longer period. Proactive approaches for avoiding injuries always result in reduced recovery time in case of an injury which reduces the recovery time. Future studies can be performed for researching specific exercises to reduce impact on the joint and reducing knee and hip pain post activity.

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