

## **Strategies for Dealing with Physical Challenges for Older Students in Taekwon-Do**

This essay explores the challenges that often confront students who begin Taekwon-Do (TKD) at an older age, and the strategies that can be used to overcome them. This is a topic that has been of special interest to me since injuring my back ten years ago as a 43-year-old blue belt. Rehabilitation has been a matter of “peeling the onion layers” to get to the basic causes of my injury, which were biomechanical in nature that had developed from a very early age and had not been addressed. I will outline the challenges faced by older beginner TKD students. These include limited ranges of mobility due to a variety of factors, including previous injuries and kinetic chain compensations; age-related changes in the body; and for some, a lifetime of poor posture. Next, I will set out some strategies that may be used to overcome these challenges, such as how to go about improving biomechanics through a diagnosis of fundamental movements, complementary training, regular stretching, considering daily posture, regaining range-of-motion after injury, and touching on the importance of recovery.

The aim of this essay is to provide beginner Taekwon-Do students (especially those who are more mature) with a general understanding of how individual biomechanics effect their practice, as well as approaches and strategies that may help the student improve their performance, reduce chances of injury, and increase their enjoyment levels. My hope is that the reader will not ignore ongoing pain signals that our bodies give, and take timely action to prevent injury, improve performance, and enjoy their TKD journey for as long as possible.

### **My Taekwon-Do journey**

In 2008, at the age of 40, I knew I had to change my lifestyle for the better. Years of neglecting my body had been catching up with me and I was keeping an eye out for a sport to keep me active on a regular basis. Around that time my 9-year-old daughter, Anna, started training in Taekwon-Do at the Khandallah club in Wellington, shortly followed by her younger brother, Jack. My interest in TKD was sparked when the kids participated in their first tournament. After watching mature colour belt students competing in sparring, patterns, and board breaking, TKD looked like a good option for regular exercise, a challenge, and some fun too! Plus, its family-friendly environment meant it was something we could enjoy together as a family. I decided to give TKD a go at 42 years old!

So why is TKD worth exploring for older adults? Generally, TKD offers an appealing way to stay in shape. It's a great cardio workout that exercises the entire body from head to toe, builds muscle without needing to lift weights, and improves co-ordination. Regular classes sharpen your mind and body, helping you gain flexibility and range-of-motion, and improving your overall strength, stamina, confidence, and self-esteem. Gradings offer continual challenges and learning self-defense provides a sense of empowerment. Along the way you meet and train with a wonderful group of people.

Upon starting classes, I quickly realised Taekwon-Do was going to be a biomechanical challenge for me. I found that I could not get my body into stances correctly or execute kicks as they were intended - it was hard, really hard! Years of office work had led to poor posture, short hamstrings, tight calves, and inactive glute and core muscles, leading to many episodes of back pain. This really had me starting at a disadvantage. I was strong in certain areas and exercises, yet incredibly weak and inflexible in others. Had I embarked on improving my biomechanics at an earlier stage, I have no doubt that it would have saved me a lot of time and pain. When I was a blue belt, I suffered a back injury (L4/L5 herniated disc) resulting in sciatic nerve damage to my right foot and leg that caused weakness and instability that I have not fully recovered from in over ten years.

The initial challenge that I found when starting TKD, and that many older beginning students face, is instability of the muscular skeletal system. By this I mean a lack of core strength, general flexibility, and a lack of strength when executing techniques at full extension. The sooner these limitations can be addressed by the TKD practitioner the better. Older students who learn to focus, as a priority, on their biomechanical shortcomings will inevitably improve their performance at a faster rate, reduce their chance of injury, and ultimately find more enjoyment in their practice as a martial artist.

It should be noted that the discussed challenges faced by older beginning students have been generalised and we need to recognise that not all students are at the same starting point.

Differences in age, goals, genetic strengths and weaknesses, injury histories, time available to train, flexibility, etc., are all factors to consider. A student would be wise to consult qualified professionals to help create a personalised training programme that considers one's individual goals, fitness level, available time, and any existing medical conditions, to complement their TKD journey.

## **Challenges faced by older students**

Older martial arts students, especially beginners, may experience limited ranges of mobility due to a variety of issues. In this essay I will be focusing on the following factors:

- 1) Previous injuries and kinetic chain compensations
- 2) Age related changes
- 3) A lifetime of bad posture
- 4) Specific areas of biomechanical interest

### **Previous injuries and kinetic chain compensations**

When there is an injury or problem within the kinetic chain – the links in the chain of muscles, bones, and joints that work together to produce movement in the body – it can result in compensations or adaptations in other parts of the body in an effort to maintain function.

For example, if a student has an injury to their knee, they may avoid putting weight on that leg, favouring the other leg. This can lead to overuse and strain in the hip or lower back. This is because the body is compensating for the injured knee by shifting weight on to the uninjured leg and changing the way it moves to avoid pain. These compensations can create a cascade of issues, leading to further injury and pain.

Being aware of any injury and compensation issues that you may carry is a great starting point. From there you can start to address the root cause of the problem, along with any compensations or adaptations that have developed. Be aware that ongoing pain in a specific area is a signal from the brain that it is trying to protect you and keep you safe. It may be that you have torn a muscle, or simply that your muscular skeletal system is not moving as it should and requires further investigation.

### **Age-related changes in the body**

As we get older, changes naturally occur in the body. These can lead to:

- decreased balance, making it difficult to maintain footing during training.
- decreased flexibility, particularly in the muscles and joints. This can be challenging for these students to perform certain moves and stretches in TKD.
- new movements becoming harder to learn, remember and perform.

- longer recovery time from injuries or soreness, which can impede training progress.
- limited core strength, due to decreased muscle mass, makes it harder to perform certain movements with proper form and power.
- hesitance to engage in certain activities, kicks, and techniques, due to the increased risk and fear of injury.
- reduced cardiovascular endurance, that can make it difficult to keep up with the pace of training.

Older TKD students will recognise the above challenges especially in comparison to younger TKD practitioners!

### **A lifetime of poor posture**

Poor everyday posture can have a range of negative effects on the body, both in the short-term and over the long-term. Older TKD students have had many more years to develop bad posture. Think of sedentary jobs: spending long periods of time sitting each day, shortening hamstrings, and causing glute muscles to become lazy and inactive, as an example.

Some of the most common effects of poor posture include musculoskeletal pain, nerve compression, and decreased mobility.

### **Specific areas of biomechanical interest for older TKD students**

Biomechanics is the science of the movement of a living body, including how muscles, bones, tendons, and ligaments work together to move.

A number of areas are of particular interest for TKD, especially when we investigate biomechanics in older students, include:

#### *Shoulders*

Stiffness and limited mobility in the shoulders can make it difficult to perform arm movements required for particular TKD strikes and blocks as well as fitness training exercises such as push-ups.

#### *Hips*

Limited hip mobility can make it difficult to perform lower body movements, turning and flying kicks, high kicks, and exercises such as squats.

### *Core muscles*

Your core muscles are the muscles deep within the abdominals and back, attaching to the spine or pelvis. Some of these muscles include the transversus abdominis, the muscles of the pelvic floor, and the oblique muscles. Think of your core as a foundation for all activities. The core links the upper body and lower body together. Having a strong and solid core creates a foundation for all activities in TKD.

### *Lower back*

Muscle tightness and general weakness in the core muscles can make it difficult to perform dynamic movements that require a strong, stable core and lead to back pain and movement limitation.

### *Knees*

Arthritis, torn cartilage, knee bursitis, inflammation, tendonitis, and other previous injuries can cause stiffness and limited mobility in the knees, making it difficult to perform movements that involve kicking, lunging, or changing direction during patterns, and sparring.

### *Ankles*

Decreased range of motion in the ankle joint, (often caused by a sedentary lifestyle), previous injuries, inflammation, and tendinitis, can make it difficult to get into correct stances and perform pattern movements that especially involve standing on one leg or jumping.

A TKD student experiencing persistent pain in any of these areas should investigate the underlying cause.

*“When pain persists and feels like it is ruining your life, it is difficult to see how it is serving any useful purpose. But even when pain is chronic and nasty, it hurts because the brain has concluded, for some reason or another, that you are threatened and in danger and need protecting – the trick is finding out why the brain has come to that conclusion.”*

(Butler & Moseley, 2013, p.11)

## **Strategies to improve biomechanics and stability**

### **Overcoming a lifetime of past injuries, poor posture, and compensations**

While the challenges in the last section can seem overwhelming (and often seem too much or too time consuming for people to overcome – ultimately causing them to quit), these are all things that, if properly acknowledged, can be overcome with certain strategies, including:

- 1) Improving your biomechanics
- 2) Complementary training
- 3) Regular stretching
- 4) Daily posture
- 5) Sports massage
- 6) Post injury range of motion
- 7) Recovery

As discussed above, an older beginner TKD student may have many extra challenges relating to mobility than younger practitioners. TKD is physically challenging, especially as an older student. Starting my own TKD journey at 42, it quickly became clear that my battle was to overcome past injuries, body instability, poor range of motion and a naturally aging body in decline... challenging to say the least!

So, what can be done to improve your strength, flexibility, and range of motion? Older students often start TKD after years of work, bringing up a family, injuries, medical events, etc. These are all things that naturally take priority in a person's life but can create challenges when they decide to start a dynamic martial art like TKD. It is important to be aware of how these factors may have affected your body over your life, and the challenges they may have created that need to be overcome to progress and lower your chances of injury. While not an exhaustive list, below are 7 strategies that can help diagnose problems, improve physical performance, and make progress towards overcoming age related physical limitations.

#### **1) Improve your biomechanics**

Working on your biomechanics as an older TKD student is enormously beneficial. It can prevent injuries and save you a lot of pain and missed trainings and can massively improve your performance. Give yourself a biomechanical “warrant of fitness” and engage a professional if possible. An experienced set of eyes will almost certainly be able to assist you in finding movement limitations that you may have been unaware of.

Examples of professionals that may be of assistance:

### *Osteopath*

Osteopathy is a form of manual medicine which recognises the important link between the structure of the body and the way it functions. Osteopaths assist healing by focusing on how the skeleton, joints, muscles, nerves, circulation, connective tissue, and internal organs function together as a holistic unit.

### *Personal trainer*

Working with a personal trainer can improve your biomechanics and enhance your performance by improving your technique and how your body moves during fundamental movements (e.g., squat, pull, push, lunge, hinge, rotation, gait) and modifying specific training protocols to help you achieve your goals while avoiding injury.

### *Biomechanical analysis professional*

These practitioners will perform an assessment of your static posture and different movement patterns (e.g., squat, lift/hinge, push/pull, lunge, gait, run/walk). Your performance in these movement patterns – signified by factors such as muscle sling performance, joint complex stability, mobility, and strength – are evaluated and any limitations found can be accessed and addressed through exercises.

For third party biomechanical analysis:

- *Proactive 4 Health* <https://proactive4health.co.nz/biomechanical-analysis/>
- *Bodylab* <https://bodylab.co.nz/>

Suggested reading for self-testing and mobilization techniques

- *Becoming a supple leopard: The ultimate guide to resolving pain, preventing injury, and optimizing athletic performance* (Starrett & Cordoza, 2013).
- *Movement: Functional movement systems: Screening, assessment, and corrective strategies* (Izraelski, 2012).
- *Functional movement screening: The use of fundamental movements as an assessment of function – parts 1 & 2* (Cook, Burton, Hoogenboom, & Voight, 2006).

Working on your biomechanics will go a long way to improve your kinetic chain and help remedy compensations from previous injuries.

## 2) Complementary training

Fortunately, there is usually plenty of opportunities for extra TKD specific training beyond our usual club training. Visit other clubs, join in regional, black belt or national trainings, or simply spend time practising by yourself.

To really make progress in the fundamental movement patterns required for TKD, complementary training can make a big difference and help you progress at a faster rate. The goal of complementary training as a TKD practitioner is to create a balance of physical activities that address all aspects of your fitness, including cardiovascular fitness, muscular strength and endurance, flexibility, and balance. It is a way to improve your overall health and fitness by utilising a variety of exercises and activities that work different muscle groups and biomechanical systems of the body. By training multiple aspects of fitness, you can reduce the risk of injury and improve your overall health and well-being, and ultimately, your TKD performance. Some recommended complementary training examples that are beneficial to the TKD student include:

### *Personal training*

Specifically working on a mixture of strength, flexibility, cardio and biomechanical weaknesses and imbalances can improve fundamental movement patterns. Personal training is beneficial for TKD students as it allows a trainer to personalise instruction and guidance to help students achieve their specific goals. A personal trainer can help to create a customised training program that considers the individual's biomechanical weaknesses, fitness level, martial arts experience, and any existing medical conditions. A personal trainer can also provide motivation and encouragement to help the individual stay on track and achieve their TKD goals.

### *Running*

This is an effective way to improve your martial arts skills. It helps you build endurance, speed, and agility. It also increases your overall fitness level.

### *Cycling*

This is a low impact activity that strengthens your knee and leg muscles, is an effective cardiovascular workout, improves endurance and stamina, and helps to engage the core muscles, which are important for balance, stability, and power during TKD movements.



### *Weight training*

This can be a beneficial form of exercise, as it can help to improve flexibility, fundamental movements, muscle strength, power, and endurance. Additionally, weight training can also help to improve overall fitness, as well as promote injury prevention and recovery.

### *Yoga*

This can be a beneficial form of exercise for martial artists, as it can help to improve flexibility, balance, focus, and breathing. Additionally, yoga can also help to promote injury prevention, recovery, and overall well-being.

Complementary training will help work on different ranges of motion and muscle groups to support your TKD training and help prevent injury.

### **3) Regular stretching**

It is the combination of strength and flexibility that allows a TKD practitioner to execute the various hand and foot techniques correctly. As the various muscle groups gain strength, they can operate within a new range, and strength can be built in this range. Small gains in flexibility, reinforced with strengthening at this new range can lead to further stability and flexibility gains.

*Proprioceptive Neuromuscular Facilitation (PNF)* stretching is a type of stretching that involves contracting a muscle group, then passively stretching the same muscle group. The contraction is typically performed isometrically, meaning that the muscle is contracted without any visible movement.

*Partner stretching* also known as assisted stretching, is a technique where one person uses their body weight or leverage to assist another person in stretching a specific muscle group. This technique is commonly used in club to improve flexibility and range of motion in specific muscle groups.

While a regular stretching programme will not remove all injury risk, it probably reduces the risk overall, and does reduce muscle issues like delayed onset muscle soreness (DOMS). (See Jamtvedt, Herbert, Flottorp, et al., 2010)

#### **4) Daily posture**

Poor posture can be the initial cause of poor biomechanics and kinetic chain compensations. Physical therapy or other forms of rehabilitation may be necessary to correct longstanding problems with posture. It is important for TKD students to be conscious of their body positions in daily life and to try to maintain good posture to avoid the negative effects of poor posture and keep the body functioning properly. At the very least, being mindful of the way you sit, stand, bend over, lift, and move throughout the day will help. See a helpful guide [here](https://medlineplus.gov/guidetogoodposture.html) for more information (<https://medlineplus.gov/guidetogoodposture.html>).

#### **5) Sports massage**

While the goal of sports massage is to help the body recover from intense physical activity, prevent injuries, and enhance performance, more research needs to be done to establish its effectiveness (Davis, Alabed, & Chico, 2020).

Here are some benefits that have generally been promoted as linked to sports massage:

- Helps increase flexibility by stretching tight muscles and breaking up scar tissue.
- Helps prevent injuries by identifying and addressing potential problem areas before they become more serious.
- Increases blood flow to the muscles, which can help improve performance and reduce the risk of injury.
- Helps reduce muscle soreness and stiffness by increasing blood flow and lymphatic drainage, which helps to remove waste products and reduce inflammation.
- Increases range of motion by releasing muscle tension and improving joint mobility.
- Helps reduce recovery time after an intense workout or competition by reducing muscle fatigue and soreness.

Regular sports massage may be beneficial to help prevent injury, improve flexibility and DOMS (Davis et al., 2020). In my own experience, sports massage has been beneficial in pinpointing what muscles and tendons are sore or tight from training focuses at TKD and Personal Training so that certain muscle groups are not inadvertently overtrained.

## **6) Post injury range of motion**

After an injury your brain will naturally protect the area and limit muscle activity and range of motion. Once the injury has healed movement may not return to normal because of the brain's fear and anticipation of pain (Butler & Moseley, 2013; Moseley, Lorimer, Hodges, & Paul, 2005; Moseley, et al., 2004). Recovering fully from an injury should also involve exercises to re-train the brain to allow you to regain a full range of motion. Once I injured my own back, it took many years for me to realise that my back was not rotating to the degree it used to. Think of the first part of a reverse turning kick; when you rotate your upper body just before your leg lifts to execute the kick. My brain thought that my body could not move the last 5-10 degrees in this range. However, it could; I just needed to do some exercises that got me the extra rotation without pain, so my brain now knows it is safe at the previously limited range and lets me go there.

After injury it is especially important for the older TKD student to regain a full range of motion or risk kinetic chain compensations that may eventually lead to further injury.

## **7) Recovery**

Nutrition, sleep, hydration, and supplementation all play significant roles in recovery and are especially important for TKD practitioners during periods of high intensity, such as training for gradings. As each of these topics is only briefly covered under the scope of this essay, I would encourage the TKD practitioner to do more research into how these factors should be considered for their personal recovery.

### *Nutrition*

Proper nutrition supports tissue repair, immune function, and overall health. Close attention should be paid to nutrient intake, including vitamins, minerals, and macronutrients (protein, carbohydrates, fats).

Protein is essential for maintaining and repairing muscle and other tissues. Adequate protein intake can help maintain muscle mass, strength, and mobility, which are crucial for recovery.

High-intensity exercise, especially when performed regularly, can lead to an increase in oxidative stress within the body. This oxidative stress results from the generation of free radicals during exercise, which can damage cells and tissues. Antioxidants, such as vitamins C and E, beta-carotene, and various phytochemicals found in fruits and vegetables, are

compounds that can help counteract the harmful effects of free radicals. They do this by neutralising free radicals, preventing cellular damage, and reducing inflammation.

### *Sleep*

Good sleep is essential for recovery. It allows the body to repair and regenerate tissues, and supports overall cognitive and physical health.

### *Hydration*

Staying adequately hydrated is essential for overall health and can aid in the recovery process by maintaining normal bodily functions. During high-intensity exercise, electrolyte imbalances can occur due to increased sweating and loss of essential minerals such as sodium, potassium, calcium, magnesium, and chloride. It's crucial to replenish electrolytes to maintain performance and prevent potential negative effects such as muscle cramps, dehydration, and heat-related issues.

### *Supplementation*

Vitamin and mineral supplements may be of benefit, particularly if specific deficiencies are known or if medical conditions that hinder nutrient absorption are present. Common supplements may include vitamin D, calcium, vitamin A, vitamin B12, and omega-3 fatty acids.

In summary, proper nutrition, sleep, hydration, and supplementation can significantly impact recovery and overall health. Tailoring these factors to individual needs, and consulting with healthcare professionals are sound steps to optimise individual recovery.

## **Conclusion**

So why put all this effort, as an older TKD student, into fixing your biomechanics and looking after your body? It takes time, effort, and persistence over many years to change movement patterns ingrained over time. One of the most unfortunate reasons a student leaves TKD is when they want to train but cannot anymore, due to persistent injuries that were, to a large extent, preventable. By committing the time and effort necessary to improving your biomechanics, you will begin to notice steady improvements that positively reflect in your training, movement, performance, and life in general. At 55 years old I am now fitter and more biomechanically functional overall than I have ever been in my adult life. 'Listening' to

my body, seeking professional help, and persisting in the face of injuries and setbacks has been of enormous benefit for my training and life.

*“Our bodies are our gardens – our wills are our gardeners.” – William Shakespeare*

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