

# STARTING TAEKWON-DO AFTER 40

Thesis submitted as part requirement for grading to IV Dan

#### ABSTRACT

The number of individuals over 40 years old taking up Taekwondo is growing as people seek ways to stay physically active and mentally sharp. This thesis explores the challenges and benefits of starting Taekwondo at an older age, highlighting the physical, mental, and social advantages. Through literature review and case studies, this thesis provides practical strategies for older adults to successfully integrate into Taekwondo practice and achieve their fitness goals.

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# 1. Introduction

As life expectancy increases and the population ages, more people are seeking ways to maintain their health and fitness into their later years. Martial arts, particularly Taekwon-do, offer a unique combination of physical activity, mental discipline, and community engagement. This thesis presents the research on the experiences of individuals over 40 who start practicing Taekwon-do, focusing on the challenges they face and the benefits they gain. The purpose is to provide insights and practical advice for older adults interested in beginning Taekwon-do.

# 1.1. Background on Taekwon-do and its popularity among various age groups

Taekwon-do is a Korean martial art that focuses on fast, dynamic kicking techniques, along with hand strikes, blocks, and various forms of footwork. The name "Taekwon-do" is derived from three Korean words: "tae" (meaning "to strike or break with the foot"), "kwon" (meaning "to strike or break with the fist"), and "do" (meaning "the way" or "art").

Taekwon-do has gained immense popularity worldwide and is practiced by people of all ages. Although accurate figures are hard to come by, the following table summarises the global reach of various martial arts around the world obtained through internet searches and include the estimated number of practitioners. Specific data for different age ranges is not readily available, but the table provides a general overview of the popularity of different martial arts.

Martial Art <sup>1</sup>	Estimated Practitioners Worldwide	General Age Ranges
Taekwon-do	80 million	All ages (children to adults)
Karate	100 million	All ages (children to adults)
Judo	28 million	All ages (children to adults)
Kung Fu/Wushu	60 million	All ages (children to adults)
Brazilian Jiu-	2.5 million	Primarily adults, some
Jitsu		children
Muay Thai	300,000	Primarily adults, some children
Aikido	1.2 million	Primarily adults, some children
Krav Maga	500,000	Primarily adults
Capoeira	6 million	All ages (children to adults)

<sup>&</sup>lt;sup>1</sup> Where a martial art has more than one style, the estimation includes all the styles.

Boxing	25 million	All ages (children to adults)

#### Notes:

- 1. **Taekwon-do**: Widely practiced across the globe, with many children and adults participating in both recreational and competitive settings.
- 2. **Karate**: Popular in many countries, often taught in schools and private dojos, attracting practitioners of all ages.
- 3. **Judo**: Particularly strong in countries like Japan and France, with significant youth programs and adult participation.
- 4. **Kung Fu/Wushu**: A traditional martial art with a large following in China and growing popularity worldwide.
- 5. **Brazilian Jiu-Jitsu**: Rapidly growing, especially in the United States and Brazil, with many practitioners being adults.
- 6. **Muay Thai**: A traditional martial art from Thailand with a growing global presence, especially in adult martial arts communities.
- 7. **Aikido**: Known for its defensive techniques, attracting adults who are interested in non-aggressive martial arts.
- 8. **Krav Maga**: Focused on self-defence, with a strong following among adults seeking practical martial arts training.
- 9. **Capoeira**: A Brazilian martial art that combines elements of dance, widely practiced by people of all ages.
- 10. **Boxing**: A globally popular sport with a strong presence in competitive sports and fitness communities.

Here are some stated reasons for Taekwon-do's appeal among different age groups:

- **Children and Teenagers**: Taekwon-do offers several benefits for young practitioners as it helps improve physical fitness, coordination, balance, and flexibility. The structured training and discipline of Taekwon-do teach self-control, focus, and respect. Additionally, children can develop self-confidence and learn important values such as perseverance and sportsmanship. Taekwon-do also provides an outlet for energy and promotes a healthy lifestyle.
- Young Adults: Taekwon-do appeals to young adults due to its energetic and dynamic nature as it offers an engaging form of exercise that helps build strength, agility, and endurance. Many young adults are drawn to the competitive aspect of Taekwon-do and enjoy participating in tournaments and sparring competitions. It also serves as a source of stress-relief and a means of selfdefence.
- Adults: Taekwon-do is popular among adults for varying reasons: It provides an effective full-body workout, which helps improve cardiovascular fitness, muscular strength, and flexibility. Taekwon-do offers a way to maintain and/or improve overall physical health and body composition. Additionally, adults appreciate the mental health benefits of Taekwon-do, which include stress reduction, increased focus and improved self-confidence. Taekwon-do can also

- be practiced as a social activity, allowing adults to connect with like-minded individuals and to form a sense of comradery and community.
- Older Adults: Taekwon-do can be adapted to suit the needs of older adults, making it a popular choice for senior practitioners. Taekwon-do offers low-impact exercises which aid in enhancing mobility, balance, and coordination. These are particularly beneficial in preventing falls and in improving overall physical well-being. Taekwon-do also provides cognitive stimulation and challenges memory through the learning of patterns and techniques. Additionally, the social aspect of Taekwon-do can be particularly valuable for older adults as it may provide a supportive community, and opportunities for social interaction which may otherwise be lacking.

Overall, Taekwon-do's popularity among various age groups can be attributed to its physical; mental health; emotional development and improved self-defence benefits. Additionally, Taekwon-do enhances the sense of community and comradery.

Anecdotally, it is often observed that when walking into a dojang, the number of younger students vastly outnumbers those of older participants, especially those over 40 years of age. Despite this age group becoming more active and taking part in more active lifestyles, taekwon-do is often seen as a sport for young athletic people in part due to the reputation of taekwon-do often demonstrate by people leaping through the air performing seemingly impossible athletic kicks during demonstrations. However, the taekwon-do training community is increasingly adapting to the limitations of older athletes wishing to take up the sport.

This thesis will examine the importance of physical activity of people over 40 years of age and how taekwon-do can benefit these people. It will discuss the physical and mental attributes required, the barriers and challenges someone is likely to face. The benefits of taking up Taekwon-do for this age group will be discussed together with the adaptations that are required to enable them to full participate in the sport.

This is aimed at prospective practitioners, instructors and those promoting Taekwon-do as an activity for mature individuals.

# 1.2. Importance of physical activity and fitness for individuals over 40

As people age, maintaining physical activity and fitness becomes increasingly important. The benefits of regular exercise go beyond physical appearance, contributing also to overall health, longevity, and an enhanced quality of life. For example, for individuals aged over 40, engaging in regular physical activity becomes crucial in

reducing age-related decline in physical function – including the onset of chronic illnesses.

A primary reason for promoting physical activity after the age of 40 is that it can assist in the preservation of muscle mass and strength. Aging is often associated with a natural decline in muscle mass (known as sarcopenia), which can lead to decreased mobility, frailty, and an increased risk of falls. Regular exercise (including resistance training and weight-bearing activities) can help to counteract muscle loss, maintain bone density, and improve balance and coordination.

Moreover, physical activity plays a significant role in helping to maintain a healthy weight and in managing body composition. With age, the body's metabolism tends to slow down, making weight management more challenging. Regular exercise, paired with a balanced diet, can help boost metabolism, burn calories and reduce the risk of obesity. Maintaining a healthy weight is essential as it aids in lowering the risk of chronic conditions such as heart disease, type 2 diabetes and certain types of cancer.

Beyond the physical benefits of Taekwon-do, exercise positively impacts on both mental health and cognitive functions, as physical activity stimulates the release of endorphins (often referred to as "feel-good" hormones). Endorphins can assist in alleviating symptoms of depression and anxiety. Additionally, exercise aids in improved sleep quality, reduced levels of stress and enhanced mood and well-being.

Physical activity also increases blood-flow to the brain, stimulating the growth of new neurons, which enhance synaptic connections. This can lead to improved memory, attention and problem-solving skills. Physical activity can thus assist in preventing degenerative neurological conditions such as dementia.

However, that when starting or intensifying an exercise routine after the age of 40, it is crucial to consider an individual capabilities and any existing health conditions to prevent illness or injury. In some instances, individuals may need to consult with a healthcare practitioner prior to engaging in such exercise. Engaging in a variety of activities which encompass cardiovascular exercise; strength training; flexibility and balance exercises can provide a well-rounded fitness regimen if completed with adequate supervision and understanding of associated risks.

In summary, physical activity and fitness play a vital role in the lives of individuals over 40. Regular exercise promotes muscle strength; assists in the maintenance of healthy weight; supports cardiovascular health; enhances mental well-being and preserves cognitive function. By incorporating physical activity into daily routines, individuals can enjoy the long-term benefits of improved health, increased vitality, and an overall better quality of life as they age.

#### 1.3. Attributes required for Taekwon-do

Taekwon-do is a Korean martial art that emphasises a combination of physical fitness, mental discipline, and technique. While there are no strict physical attributes required to practice Taekwon-do, certain qualities can be advantageous:

- Flexibility: Taekwon-do involves high, fast kicks. Good flexibility can help
  practitioners perform these techniques more effectively and with reduced risk of
  injury.
- 2. **Strength:** Developing strength, especially in the legs and core, is important for generating power in kicks and maintaining balance.
- 3. **Endurance:** Taekwon-do training can be physically demanding, so having good endurance helps practitioners train for longer durations and perform well in sparring matches.
- 4. **Balance and Coordination:** Being able to maintain balance and coordinate movement is crucial for executing precise techniques and avoiding injury.
- 5. **Discipline and Mental Toughness:** Taekwon-do places a strong emphasis on mental discipline, self-control, and perseverance. These attributes are essential for success in both training and competitions.

#### The five elements of Taekwon-do:

- Fundamental Movements: Fundamental movements in Taekwon-do include stances; blocks; strikes and kicks. These are the building blocks of the martial art and are essential for developing proper technique and balance.
- 2. **Patterns (Tul)**: Patterns are prearranged sequences of movements that simulate defence and attack techniques against imaginary opponents. Practicing patterns helps improve a practitioner's balance, coordination, and understanding of the application of techniques.
- 3. **Sparring**: Sparring involves controlled combat between two practitioners. The objective of sparring is to score points by landing kicks and strikes on specific target areas of the opponent's body. Taekwon-do sparring is typically divided into Olympic-style (full-contact) and traditional (light-contact) categories.
- 4. **Self-defence:** Self-defence techniques in Taekwon-do focus on practical methods for protecting oneself in real-life situations. These techniques may include escaping from grabs, countering attacks, and immobilising or incapacitating an attacker.
- 5. **Conditioning:** Conditioning refers to preparing the body to undertake the previous four elements, it refers to the development of the fitness and flexibility required, as well as strengthening of the striking tools used in Taekwon-do often

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demonstrated by breaking techniques, where practitioners show their power, precision and technique by breaking boards or other objects with strikes and kicks.

It is important to note that Taekwon-do can be adapted to suit individuals of various ages and physical abilities. While the physical attributes mentioned earlier can be advantageous, Taekwon-do is accessible to a wide range of people, and training can help individuals improve their physical fitness over time. Additionally, the mental and philosophical aspects of Taekwon-do are equally important, promoting values such as respect, courtesy and perseverance.

# 2. Challenges Faced by Individuals Over 40 in Starting Taekwon-do

# 2.1. Physical Limitations, Flexibility and Mobility Challenges:

Taekwon-do is a martial art that combines dynamic kicking techniques, hand strikes, and defensive movements. While it is never too late to start practicing Taekwon-do, individuals over the age of 40 may encounter specific challenges and issues due to physical limitations, as well as flexibility and mobility challenges. Natural aging processes, including decreased muscle mass, joint stiffness, and reduced flexibility are factors that can negatively impact an individual's ability to perform certain movements and techniques in Taekwon-do. Understanding and addressing these factors is essential for a safe, enjoyable and effective training experience.

It is important that older practitioners are aware of their physical imitations/capabilities, and that their training is adapted accordingly. Consulting with a qualified instructor who understands the specific needs of mature students can help in tailoring the training program to individual requirements. Modifications can be made to accommodate joint issues, reduce impact on vulnerable areas, and prevent injuries. Gradually increasing the intensity and duration of training sessions, while allowing for adequate recovery time, is also crucial to avoid overexertion.

Flexibility and mobility challenges are often encountered by individuals aged over 40 in Taekwon-do. Age-related stiffness in joints and muscles can make it more difficult to achieve high kicks and some stances that are characteristic of the art. Flexibility exercises, such as stretching routines and warm-up exercises specific to Taekwon-do movements, can help improve range of motion and alleviate some mobility challenges.

It is essential for older practitioners to focus on proper warm-up and cool-down routines pre and post training sessions. A thorough warm-up prepares the body for the demands of training, increasing blood flow to the muscles, and reducing the risk of injury. Similarly, a cool-down period with gentle stretching helps prevent muscle soreness and promotes flexibility.

In addition to physical limitations and flexibility challenges, individuals over the age of 40 may also need to consider their overall health and any pre-existing medical conditions. It is recommended to consult with a healthcare professional prior to starting Taekwon-do to ensure that it is safe and appropriate for an individual's specific health circumstances. Discussing any medical concerns or limitations with the instructor can also help in modifying the training program and ensuring a safe training environment.

In conclusion, individuals over the age of 40 who decide to start Taekwon-do may face unique challenges related to physical limitations such as flexibility and mobility issues combined with pre-existing medical conditions. It is crucial to approach training with a realistic understanding of an individual's capabilities and to work closely with a knowledgeable instructor who can provide guidance and adapt the training program accordingly. With proper modifications, patience, and a focus on gradual progress, individuals over the age of 40 can still enjoy the physical and mental benefits that Taekwon-do offers whilst minimising the risk of injuries.

## 2.2. Pre-existing Injuries or Health Conditions:

When individuals over the age of 40 decide to start practicing Taekwon-do, they may face additional challenges and issues related to pre-existing health conditions. It is crucial to consider these factors to ensure a safe and appropriate training experience.

Pre-existing injuries can significantly impact the ability to participate in Taekwon-do and may require special attention and modifications. It is essential to disclose any past injuries or areas of concern to the instructor and seek professional advice where necessary. The Taekwon-do instructor can then tailor the training program, provide alternative techniques or exercises, and guide the individual in proper body mechanics to minimise the risk of aggravating existing injuries.

Individuals with health conditions need to use caution when starting Taekwon-do. Conditions such as cardiovascular diseases; arthritis; diabetes or respiratory disorders may require modifications in training intensity, duration, or specific techniques. Consulting with a healthcare professional before beginning Taekwon-do is crucial to determine any limitations or recommendations based on an individual's health condition.

It is important to communicate openly with the Taekwon-do instructor about any health conditions or concerns to ensure that the training program can be adapted accordingly. The instructor can provide guidance on appropriate warm-up and cool-down exercises, monitor intensity levels during training, and offer modifications to accommodate individual needs. Periodic breaks and/or modifications to training routines to allow for recovery or to prevent exacerbation of health conditions may be required.

Appropriate self-care and injury prevention strategies are crucial for individuals over the age of 40 with pre-existing or emerging medical conditions. This includes listening to the body and avoiding pushing beyond appropriate limits. The recognition of symptoms of pain or discomfort, and in seeking medical attention when necessary is paramount to a healthy approach to Taekwon-do training. Engaging in regular strength and conditioning

exercises outside of Taekwon-do training can help improve overall fitness, which may in turn reduce the risk of injury and enhance overall performance.

In summary, individuals over 40 who have pre-existing injuries or health conditions may face unique challenges when starting Taekwon-do. Open communication with the instructor, consulting with healthcare professionals, and being aware of personal limitations are essential for a safe and effective training experience. With proper guidance, modifications, and a focus on individual needs, individuals can still benefit from the physical and mental aspects of Taekwon-do while minimising the risk of aggravating existing injuries or health conditions.

## 2.3. Psychological barriers and mindset

#### 2.3.1. Self-confidence and self-image concerns

Starting Taekwon-do as an individual over the age of 40 can bring about psychological barriers and mindset challenges that may affect an individual's self-confidence and self-image. It is important to address these concerns to fully embrace the training experience and derive maximum benefits from practicing Taekwon-do.

Self-confidence can be a significant psychological barrier for individuals starting Taekwon-do later in life. It is natural to feel self-conscious or to doubt individual abilities when surrounded by younger, more agile practitioners. However, it is important to note that Taekwon-do is a personal journey of self-improvement, and progress should be measured against individual capabilities. Setting realistic goals, celebrating victories, and focusing on personal growth can boost self-confidence over time.

Self-image concerns may arise due to factors such as body image or feeling out of place among younger practitioners. Taekwon-do emphasises discipline, respect, and perseverance rather than physical appearance. Embracing the mindset that individual worth is determined by effort and character can help overcome self-image concerns. Surrounding oneself with a supportive and inclusive training environment can also contribute to a positive self-image.

Developing a growth mindset is crucial in overcoming psychological barriers.

Acknowledging that skills and abilities can be improved with practice and dedication, regardless of age, is key. Embracing the learning process, being open to making mistakes, and viewing challenges as opportunities for growth can help shift the mindset from self-doubt to a positive and empowering outlook.

Engaging in positive self-talk and reframing negative thoughts is essential for building self-confidence. Reminding oneself of personal strengths, focusing on progress, and challenging negative self-perceptions can help cultivate a more positive mindset. Seeking encouragement and support from instructors, fellow students, or joining a

community of individuals with similar experiences can also provide valuable reassurance and motivation.

It is important to set realistic expectations and be patient with progress. Taekwon-do is a journey that requires time and consistent effort. Focusing on the process, rather than fixating solely on the result (the next grading) can help maintain motivation and overcome psychological barriers.

In conclusion, psychological barriers and mindset challenges, including self-confidence and self-image concerns, can arise when individuals over the age of 40 start Taekwon-do. By adopting a growth mindset; setting realistic goals; cultivating positive self-talk and seeking support, individuals can overcome such challenges and fully embrace the training experience. Taekwon-do offers not only physical benefits but also opportunities for personal growth, increased self-confidence, and improved mental well-being.

#### 2.3.2. Fear of injuries or lack of progress

One of the significant barriers for individuals over the age of 40 considering starting Taekwon-do is the fear of injuries and concerns about lack of progress. These are often fuelled by the physical demands and the high-impact nature of martial arts. However, addressing these concerns is crucial for encouraging more people in this age group to take up Taekwon-do, thereby benefiting from its physical and mental health advantages.

The fear of injuries is particularly pronounced among older adults who may already be dealing with age-related physical changes such as reduced bone density, decreased muscle mass, and slower recovery times. Studies have shown that older adults are generally more prone to injuries like strains, sprains, and fractures due to these physiological changes (Conn & Trief, 1992; Kannus, 1999).

In Taekwon-do, the risk of injury can be mitigated through proper training techniques, gradual progression, and adequate protective gear. Beginners are often taught fundamental movements and low-impact techniques before advancing to more complex techniques. Additionally, the presence of qualified instructors who emphasize safety can significantly reduce the likelihood of injuries. According to a study by Pieter and Pieter (2000), injury rates in Taekwon-do can be kept low with appropriate training regimens and protective measures.

Another common concern is the perceived lack of progress, which can be discouraging for beginners, especially older adults who might compare themselves to younger, more agile practitioners. This perceived lack of progress can stem from various factors, including slower physical adaptation and the time required to master new skills.

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It's important to highlight that progress in Taekwon-do, as with any martial art, is highly individual and should be measured against personal benchmarks rather than comparisons with others. Moreover, the benefits of Taekwon-do extend beyond physical prowess to include improvements in mental health, such as increased self-confidence, reduced stress, and enhanced focus (Fong & Ng, 2011).

To combat the fear of lack of progress, setting realistic goals and celebrating small achievements are essential. Instructors can play a pivotal role in this by providing consistent feedback and encouragement. Furthermore, older adults can be motivated by the non-competitive aspects of Taekwon-do, such as personal growth, community involvement, and the cultivation of discipline and respect.

Educational initiatives that inform potential practitioners about the benefits and safety measures in Taekwon-do can help alleviate these fears. Testimonials from other older adults who have successfully integrated Taekwon-do into their lives can also serve as powerful motivators. Additionally, Taekwon-do schools can offer specialized classes tailored to the needs of older adults, focusing on flexibility, balance, and controlled movements.

By addressing these concerns, the Taekwon-do community can make the martial art more accessible to older adults, helping them overcome their fears and embrace the benefits that come with regular practice.

# 3. The Benefits of Starting Taekwon-do for Individuals Over 40

## 3.1. Physical health and fitness improvements

#### 3.1.1. Increased strength, flexibility, balance, and cardiovascular health

Starting Taekwon-do as an individual over the age of 40 can bring about numerous physical health and fitness benefits: increased strength, flexibility, and balance, and improving overall physical well-being.

One of the primary benefits of practicing Taekwon-do is the development of strength. Taekwon-do techniques, such as kicks, strikes, and blocks, require the engagement of various muscle groups, including the legs, core, and upper body. Through regular training, individuals can build and tone their muscles, leading to increased overall strength. Enhanced strength not only improves physical performance but also aids in everyday activities and reduces the risk of age-related muscle loss or weakness.

Flexibility is another significant aspect of Taekwon-do training. The art emphasises dynamic kicks, high kicks, and fluid movements, all of which require a good range of motion. As individuals age, flexibility tends to decrease, leading to stiffness and reduced mobility. However, through stretching exercises and dedicated practice, Taekwon-do can help improve flexibility, increasing joint mobility and allowing for more extensive movements. Enhanced flexibility not only facilitates better technique but also contributes to better posture, reduced muscle tension, and a decreased risk of injuries in other activities.

Balance is a crucial element in Taekwon-do, and training in this martial art has been shown to significantly improve balance and coordination skills (Brudnak, Dundero, & Van Hecke, 2002; Çiçek & Türkeri, 2023; Dijk, 2015; Fong & Ng, 2012; Pathare et al., 2018; Şahin, 2017). Kicking techniques, footwork, and defensive movements all require balance, stability and control. As individuals age, maintaining good balance becomes increasingly important to prevent falls and maintain independence. Taekwon-do training incorporates exercises that challenge and enhance balance, leading to improved stability, body control, and reduced fall risks (Yeole, 2020).

Taekwon-do training typically offers a variety of exercises that target different aspects of fitness. It combines elements of aerobic exercise, such as jumping jacks or continuous kicks, with anaerobic exercises like intense bursts of energy during sparring or pad work. This combination challenges the cardiovascular system in various ways, improving both aerobic and anaerobic fitness levels.

Taekwon-do also promotes cardiovascular health. Engaging in fast-paced and high-intensity training sessions elevates heart rate, improves endurance, and increases cardiovascular fitness. Regular practice can enhance lung capacity, improve circulation, and contribute to a healthier cardiovascular system overall. These benefits can reduce the risk of heart disease, lower blood pressure, and enhance overall cardiovascular fitness.

#### 3.1.2. Weight management

When individuals over the age of 40 begin practicing Taekwon-do, they can experience significant benefits in weight management and cardiovascular health due to the dynamic and high-intensity nature of the exercises performed.

One of the primary advantages of Taekwon-do for weight management is its ability to burn calories. The combination of aerobic exercises, such as kicking drills and continuous movement of patterns, along with strength training elements, results in a high calorie expenditure during training sessions. Regular practice can help individuals burn excess body fat, contribute to weight loss or maintenance, and improves body composition alongside dietary regulation ("you cannot out-train a bad diet")

Engaging in regular physical activity through Taekwon-do helps boost metabolism, which can contribute to weight loss or weight maintenance. It also enhances insulin sensitivity, which plays a role in blood sugar control and reducing the risk of diabetes mellitus.

# 3.2. Mental and emotional well-being

#### 3.2.1. Stress reduction and improved mental focus

Taekwon-do brings about significant improvements in mental and emotional well-being, offering unique benefits that contribute to stress reduction and improved mental focus, ultimately enhancing overall mental and emotional health.

One of the key advantages of Taekwon-do for mental well-being is its ability to reduce stress. Engaging in Taekwon-do, helps stimulate the release of endorphins, also known as "feel-good" hormones. These endorphins promote a sense of well-being and can alleviate symptoms of stress, anxiety, and depression. Taekwon-do's dynamic nature also allows individuals to channel their energy and emotions, providing a healthy outlet for stress release.

Taekwon-do also requires concentration and mental focus through the precision of executing techniques, maintaining proper form, and responding to various situations during training. By engaging in these mental challenges, individuals can improve their ability to concentrate and enhance their mental focus. This improved mental focus can

extend beyond the training sessions and positively impact daily life activities, such as work or personal relationships.

Taekwon-do instils a sense of discipline and self-control, which are essential aspects for mental and emotional well-being. Training in Taekwon-do involves following instructions, adhering to rules and protocols, and maintaining discipline in practicing techniques and self-improvement. These aspects foster self-discipline and self-control, which can lead to increased resilience, patience, and better emotional regulation in various aspects of life.

#### 3.2.2. Boost in self-esteem and self-discipline

Taekwon-do can have a great impact on self-esteem and self-discipline as it offers unique opportunities for personal growth, empowering individuals and instilling valuable qualities that contribute to a positive self-image and enhanced self-discipline.

One of the significant benefits of practicing Taekwon-do is the boost in self-esteem. As individuals progress in their training, achieve new belt ranks, and overcome challenges, they develop a sense of accomplishment and self-confidence. Taekwon-do requires dedication, perseverance, and hard work, and as practitioners see their skills improve and witness their progress, their self-esteem naturally increases. The journey of Taekwon-do allows individuals to recognise their own capabilities, build resilience, and take pride in their achievements, fostering a positive self-image.

Taekwon-do teaches individuals the value of respect, both for oneself and for others. The art emphasises respect for instructors, fellow practitioners, and the martial art itself. By cultivating a respectful mindset, individuals learn to value their own worth and capabilities, whilst also developing empathy and understanding for others. This respectful attitude contributes to a healthy self-esteem and enhances interpersonal relationships.

Taekwon-do training is filled with ups and downs, and setbacks can occur. However, it is through perseverance and a growth mindset that individuals can overcome challenges, learn from experiences, and continue to grow both physically and mentally.

#### 3.3. Social and community aspects

Taekwon-do brings not only physical and mental benefits but also valuable social and community aspects. Taekwon-do provides a platform for building friendships and support networks, fostering a sense of belonging and camaraderie within the martial arts community.

Taekwon-do gives the practitioner the opportunity to meet like-minded individuals who share a passion for martial arts. The training environment allows individuals to interact

with fellow practitioners, creating opportunities to forge friendships with people who have similar interests and goals. The shared experiences of training, learning, and challenging oneself together can form deep and meaningful connections.

The Taekwon-do community provides a supportive network that can contribute to personal growth and development. Within this community, individuals often find encouragement, motivation, and advice from fellow practitioners who understand the challenges and triumphs of the journey. The camaraderie that develops in Taekwon-do fosters a sense of belonging, creating a supportive environment where individuals can feel understood and accepted.

The opportunity to take part in tournaments, and workshops brings practitioners together. These events provide opportunities to expand social networks, meet practitioners from other schools, and share experiences. Participating in such events can enhance the sense of belonging and strengthen connections within the broader Taekwon-do community.

#### 3.3.1. Opportunities for personal growth and leadership

Engaging in Taekwon-do offers many opportunities for personal growth and leadership development. The practice of Taekwon-do offers a structured framework that challenges practitioners to push beyond their limits, cultivate essential qualities and embrace leadership roles within the martial arts community.

Taekwon-do also fosters self-confidence and self-belief. As individuals progress in their training, achieve new belt ranks, and master techniques, they gain a sense of accomplishment and belief in their abilities. This newfound self-confidence extends beyond the training environment and positively impacts other aspects of life, such as work, relationships, and personal endeavours. Taekwon-do challenges individuals to step outside their comfort zones, try new things, and embrace personal growth.

Taekwon-do provides opportunities for leadership development. As practitioners advance in their training, they may have the chance to mentor and assist newer students. By taking on these roles, individuals develop leadership skills, communication abilities, and a sense of responsibility. Guiding and inspiring others not only contributes to the growth of fellow practitioners but also fosters personal growth and self-awareness.

Taekwon-do also encourages individuals to embrace a growth mindset. The journey of Taekwon-do is filled with learning experiences, setbacks, and triumphs. Through this process, individuals learn to view challenges as opportunities for growth, welcome constructive feedback, and continuously improve themselves. Embracing a growth mindset allows individuals to overcome obstacles, adapt to changes, and continually strive for personal excellence.

Starting Taekwon-do as an individual over 40 can be a transformative experience. It provides an avenue for physical health improvements, including increased strength, flexibility, and balance. The arts dynamic nature challenges the body and mind, leading to numerous physical and psychological benefits.

# 4. Strategies and Adaptations for Taekwon-do Training for Individuals Over 40

# 4.1. Training modifications to accommodate physical limitations.

#### Warm-up routines and stretching exercises:

For individuals starting Taekwon-do, it is important to implement strategies and adaptations to ensure safe and effective training. Modifying training to accommodate physical limitations, incorporating proper warm-up routines, and including stretching exercises are crucial aspects of adapting Taekwon-do training for mature practitioners.

To accommodate physical limitations, it is essential to approach training with a realistic understanding of individual capabilities and potential challenges. Consulting with a qualified instructor who understands the specific needs of mature students is highly recommended. The instructor can tailor the training program based on individual limitations, providing modifications for techniques or exercises that may be challenging. This may involve reducing the intensity or impact of certain movements, adjusting stances, or focusing on specific areas that require improvement or special attention.

Incorporating a comprehensive warm-up routine is crucial for mature individuals to prepare the body for training sessions. The warm-up should consist of dynamic movements that increase blood flow, raise heart rate, and warm up the muscles. Incorporate exercises such as jogging, jumping jacks, high knees, and arm circles to activate the cardiovascular system and warm up major muscle groups. Gradually increase the intensity of warm-up exercises to prepare the body for the demands of training.

Stretching exercises are particularly important for the individuals to improve flexibility and prevent injuries. Include both dynamic stretches, which involve controlled movements through a range of motion, and static stretches, which involve holding a position to elongate muscles and improve flexibility. Dynamic stretches such as leg swings, hip rotations, and arm circles help warm up the joints and muscles, while static stretches such as toe touches, quad stretches, and shoulder stretches help improve flexibility and range of motion. It is important to perform stretching exercises after the warm-up or at the end of the training session when the muscles are warm and more receptive to stretching.

The practitioner should learn to listen to the body and be mindful of personal limitations. It is important to avoid overexertion or pushing beyond what feels comfortable. Recognize the signs of fatigue, pain, or discomfort, and take breaks or

adapt when needed. It is better to gradually progress and gradually increase the intensity and duration of training sessions, rather than pushing too hard and risking injuries or burnout.

Paying attention to recovery is vital for mature individuals. Allow sufficient time for rest and recovery between training sessions to prevent overuse injuries and support the body's natural healing process. Adequate sleep, hydration, and nutrition are also important factors for optimal recovery and overall well-being.

Strategies and adaptations for Taekwon-do training for individuals over 40 are essential to ensure safe and effective participation. Modifying training to accommodate physical limitations, incorporating proper warm-up routines, and including stretching exercises are key aspects of adapting training for mature practitioners. By implementing these strategies and listening to the body's needs, individuals can enjoy the physical, mental, and social benefits of Taekwon-do while minimizing the risk of injuries or strain.

#### Flexibility training and mobility exercises

Flexibility training and mobility exercises are crucial components of Taekwon-do training but can be more important for those over 40. These exercises help improve range of motion, joint flexibility, and overall mobility, enabling practitioners to perform techniques more effectively and reduce the risk of injuries. Here are some key considerations and exercises for enhancing flexibility and mobility in Taekwon-do that have been recognised:

- Incorporate dynamic stretching: Dynamic stretching involves controlled
  movements that take joints and muscles through a full range of motion. Perform
  exercises like leg swings, arm circles, hip rotations, and trunk twists to warm up
  the body, increase blood flow, and improve joint mobility before training
  sessions.
- 2. Emphasise static stretching: Static stretching involves holding a stretch in a comfortable position for a specific duration, typically 15-30 seconds. Focus on stretches targeting major muscle groups used in Taekwon-do, such as quadriceps, hamstrings, calves, hips, and shoulders. Examples include standing quad stretches, seated forward folds, calf stretches, and shoulder stretches.
- 3. Implement PNF stretching: Proprioceptive Neuromuscular Facilitation (PNF) stretching is a technique that combines stretching and contraction of muscles. It can help improve flexibility more effectively. One common PNF stretching method is contract-relax stretching, where you contract the muscle being stretched for a few seconds before relaxing and deepening the stretch.
- 4. Practice hip-opening exercises: Good hip mobility is crucial for executing kicks and stances in Taekwon-do. Incorporate exercises like hip circles, butterfly stretches, and pigeon poses to improve hip flexibility and range of motion.

- 5. Strengthen core muscles: A strong core contributes to stability and better overall body control. Incorporate exercises like planks, and seated twists engage and strengthen the core muscles, enhancing balance and stability during Taekwondo movements.
- 6. Include joint mobility exercises: Perform exercises that focus on the mobility of specific joints used in Taekwon-do, such as shoulder circles, wrist circles, ankle rolls, and neck stretches. These exercises help maintain joint health, prevent stiffness, and improve mobility for better technique execution.
- 7. Use foam rollers or massage tools: Outside of the training environment the practitioner can use foam rollers, massage balls, or other tools to target areas of muscle tightness and release tension. Rolling these tools over the muscles can aid in improving flexibility, relieving muscle soreness, and enhancing recovery.

Flexibility and mobility improvements take time and consistency. The individual should gradually increase the intensity and duration of stretching exercises, but always listen to their body and avoid pushing beyond comfortable limits. Incorporating regular flexibility and mobility training into the Taekwon-do routine will contribute to better performance, reduce the risk of injuries, and enhance overall physical well-being and enjoyment of Taekwon-do.

# 4.2. Progressive training and injury prevention

#### 4.2.1. Gradual skill development and progressions

Progressive training and injury prevention are key considerations for mature individuals, especially those embarking on a new fitness routine. By implementing gradual skill development and progressions, practitioners can minimize the risk of injuries and ensure a safe and sustainable training experience. Here are some strategies to incorporate progressive training and prevent injuries:

- Start with proper foundations: Begin by mastering the fundamental techniques and stances of Taekwon-do. Focus on developing correct form and body mechanics before advancing to more complex movements. This foundation is essential for building strength, stability, and technical proficiency before more advanced techniques are practised.
- 2. Gradual skill development: Progress gradually by incrementally increasing the complexity and intensity of techniques. Avoid rushing into advanced athletic movements or techniques without a solid foundation. Each new skill or technique should be introduced and practiced in a controlled manner, allowing sufficient time for adaptation and skill acquisition.
- 3. Focus on strength and conditioning: Engage in regular strength and conditioning exercises to improve overall fitness and support the demands of Taekwon-do

- training. Strengthening muscles, particularly the core, legs, and upper body, can enhance stability, power, and resilience against potential injuries.
- 4. Practice proper warm-up and cool-down: Prioritize warm-up and cool-down routines to prepare the body for training and aid in recovery. Warm-up exercises should include dynamic movements that increase blood flow and raise body temperature. Cooling down with static stretches and gentle movements helps prevent muscle tightness and promote flexibility.
- 5. Incorporate rest and recovery: Allow sufficient time for rest and recovery between training sessions. Adequate rest helps the body repair and rebuild, reducing the risk of overuse injuries and fatigue. Balancing training with rest days is essential for long-term progress and injury prevention.
- 6. Listen to your body: Pay attention to any signs of pain, discomfort, or fatigue. Pushing through excessive pain or ignoring warning signs can lead to injuries. It is important to differentiate between muscle soreness and actual pain. If an injury occurs, appropriate medical attention should be sort and allow ample time for recovery before returning to training.
- 7. Seek guidance from qualified instructors: Experienced instructors who understand the unique considerations of mature individuals can be beneficial and ensure correct guidance on proper form, technique modifications, and progressive training plans tailored to individual capabilities and limitations can be provided.
- 8. Maintain proper nutrition and hydration: Fuelling the body with a balanced diet and staying adequately hydrated supports overall health, muscle recovery, and injury prevention.

By implementing progressive training methods and focusing on injury prevention, mature individuals can enjoy the benefits of Taekwon-do while minimizing the risk of injuries and ensuring prolonged engagement with the sport. Prioritizing proper technique, gradual skill development, rest, and recovery supports a safe and sustainable training journey, allowing for long-term progress and enjoyment of the martial art.

# 4.3. Supportive training environment and instruction

Peer encouragement and motivation play a significant role in the training journey of individuals starting Taekwon-do. The support and motivation from fellow practitioners can foster a sense of camaraderie, enhance motivation, and contribute to overall enjoyment and progress. Some common ways used to provide peer encouragement and motivation include:

- Partner drills and exercises: Incorporate partner drills and exercises that require
  collaboration and mutual support. Working with a training partner allows
  individuals to encourage and motivate each other during challenging techniques
  or drills. This creates a positive and supportive atmosphere where practitioners
  can push each other to do their best.
- 2. Group activities and team building: group activities and team building exercises that promote cooperation and unity. This can include group demonstrations, team sparring, or team-based training challenges. By working together towards a common goal, individuals can uplift and inspire one another, fostering a sense of camaraderie and collective achievement.
- 3. Recognize and celebrate achievements: Acknowledge and celebrate the achievements of individuals within the training group. This can be done through verbal recognition, or certificates. Celebrating milestones and progress not only boosts the confidence and motivation of the individual being recognized but also inspires others to strive for their own achievements.
- 4. Provide constructive feedback and support: Encourage constructive feedback among peers. By providing supportive feedback and constructive suggestions, individuals can help each other improve their techniques and performance. Constructive feedback should be delivered in a respectful and encouraging manner, focusing on areas for growth and improvement.
- 5. Set training goals together: Encourage individuals within the training group to set goals and share them with their peers. This creates a sense of accountability and allows for mutual support in working towards those goals. Regular check-ins and discussions about progress and challenges can provide an opportunity for encouragement and motivation.
- 6. Share personal experiences and stories: Encourage individuals to share their personal experiences and stories related to their Taekwon-do journey. This can be done through informal discussions, guest speaker sessions, or even social media groups. Sharing personal triumphs, challenges, and lessons learned can inspire and motivate others, fostering a sense of community and resilience.
- 7. Be inclusive and supportive: Foster an inclusive and supportive training environment where individuals of all ages, abilities, and fitness levels feel welcome and valued. Encourage mutual respect, empathy, and understanding among peers. Creating an atmosphere of acceptance and support allows individuals to feel comfortable and motivated to train together.
- 8. Lead by example: As a practitioner, lead by example and demonstrate a positive attitude, dedication, and perseverance. Show support and encouragement towards others in the training group. Enthusiasm and commitment can inspire and motivate fellow practitioners to push themselves and embrace their own journey.

The positive energy and motivation derived from these interactions can enhance the overall training experience and contribute to individual progress and enjoyment.

## 5. Conclusion

# 5.1. Summary of benefits and challenges

Benefits of Starting Taekwon-do for Individuals Over 40:

- Physical health and fitness improvements
- Increased strength, flexibility, and balance
- Weight management and cardiovascular health
- Mental and emotional well-being (stress reduction, improved mental focus)
- Boost in self-esteem and self-discipline
- Social and community aspects (building friendships and support networks)
- Opportunities for personal growth and leadership development

Challenges Faced by Individuals Over 40 in Starting Taekwon-do:

- Physical limitations and considerations
- Flexibility and mobility challenges
- Pre-existing injuries or health conditions
- Psychological barriers and mindset (self-confidence and self-image concerns)
- Fear of injuries or lack of progress

Strategies and Adaptations for Taekwon-do Training for Individuals Over 40:

- Training modifications to accommodate physical limitations
- Warm-up routines and stretching exercises
- Progressive training and injury prevention (gradual skill development and progressions)
- Conditioning and recovery strategies
- Supportive training environment and instruction
- Peer encouragement and motivation.

# 5.2. Encouragement for individuals over 40 to start Taekwon-do

Encouragement for Individuals Over 40 to Start Taekwon-do:

 Age is not a barrier to starting Taekwon-do; it's never too late to begin your martial arts journey.

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- Taekwon-do offers numerous physical and mental benefits that can improve your overall well-being.
- You can set your own pace and work within your capabilities, gradually progressing as you become more comfortable and confident.
- Taekwon-do provides a supportive and inclusive community where you can meet like-minded individuals and build friendships.
- Starting Taekwon-do can boost your self-esteem, self-discipline, and mental focus.
- Taekwon-do can help you improve your physical fitness, including strength, flexibility, and cardiovascular health.
- It is an opportunity for personal growth, learning new skills, and challenging yourself both physically and mentally.
- Taekwon-do offers a sense of empowerment and self-defence techniques that can enhance your personal safety.
- Engaging in Taekwon-do can be a fun and enjoyable way to stay active, relieve stress, and have a positive impact on your overall quality of life.
- With proper instruction, modifications, and a supportive training environment, you can safely and effectively participate in Taekwon-do regardless of your age.

# 6. Selected References

하성희, et al. (2023). "Does Taekwon-do improve physical fitness in adults older than 50?: A systematic review and meta-analysis." 국기원태권도연구 14(3): 67-81.

AGAPII, E. and G. BRANIŞTE "Enhancing the Quality of Life for Elderly People With Physical Deconditioning."

Ahn, B.-O. and S.-M. Son (2024). "Analysis of Hobby Friendships among University-affiliated Taekwon-do Athletes Using Social Network Analysis."

한국엔터테인먼트산업학회논문지 18(6): 79-88.

Anastasiou, K., et al. (2024). "The Genetic Profile of Combat Sport Athletes: A Systematic Review of Physiological, Psychological and Injury Risk Determinants." International Journal of Environmental Research and Public Health 21(8): 1019.

Baruah, D., et al. (2024). "Taekwon-do Training and Its Impact on Executive Function: An Experimental Study." Nanotechnology Perceptions: 829–836-829–836.

Baek, S., Park, J.-B., Choi, S.-H., Lee, J.-D., & Nam, S.-S. (2021). Effects of Taekwon-do Training on Body Composition: A Systematic Review and Meta-Analysis. International Journal of Environmental Research and Public Health, 18(21), 11550

Beaumont, L., et al. "3 things you didn't know about stretching and flexibility."

Boobani, B., et al. (2024). "Effect of Walking in Nature on Stress Levels and Performance of Taekwon-do Athletes in the Competition Period." Journal of Kinesiology and Exercise Sciences 34(106): 17-27.

Boyanmış, A. H., et al. (2024). "The Effect Of Taekwon-do Training On Static And Dynamic Balance Development: A Brief Review." Educational Administration: Theory and Practice 30(5): 14491-14496.

Brudnak, M. A., Dundero, D., & Van Hecke, F. M. (2002). Are the 'hard' martial arts, such as the Korean martial art, TaeKwon-Do, of benefit to senior citizens?. Medical hypotheses, 59(4), 485–491. https://doi.org/10.1016/s0306-9877(02)00203-7 6.

Caruana, J. M., et al. "Mental Health and Physical Activity."

Cho, JD, Roh, HT, Taekwon-do enhances cognitive function as a result of increased neurotrophic growth factors in elderly women, [accessed https://www.mdpi.com/1660-4601/16/6/962]

Choi, H. M., et al. (2024). "The institutionalization of Taekwon-do in South Korea." Revista de Artes Marciales Asiaticas 19(1).

Conn, J. M., & Trief, P. M. (1992). Physical activity and the elderly. \_Journal of Aging and Physical Activity, 1\_(1), 3-27.

Cowan, R. "Workout Routine: Build a Workout Program to Hit Your Goals."

Davies, L., et al. Social Return on Investment of Sport, Routledge.

Dean, R. S. and J. H. Guettler (2024). "Mixed Martial Arts: Injury Patterns, Trends, and Misconceptions." Sports Medicine.

Ebrahimi, E. and S. Mozafari (2024). "The Effect of Six Weeks of Core Stability Training on Balance and Performance Improvement Among Male Taekwon-do Athletes." Journal of Sport Biomechanics 10(2): 160-173.

Esparrago, J. H. and A. J. Esparrago-Kalidas "Effectiveness of Stretching Routines in Enhancing Kicking Performance." The Athens Journal of Sports: 165.

Espeso, L. A., et al. (2024). "The Impact of Taekwon-do Training on Psychological Health and Anti-Frustration Ability of College Students." JPAIR Multidisciplinary Research Journal 55(1): 1-1.

Fong, S. S. M., & Ng, G. Y. F. (2011). Does Taekwon-do training improve physical fitness? \_Physical Therapy in Sport, 12\_(2), 100-106.

Fong, S. M., & Ng, G. Y. F. (2010). The effect of Taekwon-do training on balance and sensory performance in young adolescents. Hong Kong Physiotherapy Journal, 1(28), 24. https://doi.org/10.1016/j.hkpj.2010.11.010 14.

Góra, T., et al. (2024). "Sex differences in utilizing effective mass among taekwon-do athletes performing turning and side kick."

Gormely, T. "The Best Scientific Approach to Improving Range of Motion in Athletes."

Hariadi, N., et al. (2023). "Effectiveness of Technical Skills Attacking Senior Athlete Kyourugi at the 2023 World Taekwon-do Championship in Baku, Azerbaijan." International Journal of Emerging Research and Review 1(3): 000041-000041.

Huang, Q. and L. Li (2024). "Using Deep Learning Algorithms to Generate Personalized Training Plans for Taekwon-do Competitions of Physical Education Majors." World Scientific Research Journal 10(7): 65-74.

Jiang, Z. "Assessment of the health effects of martial arts from the perspective of double difference modeling and its application in modern society." Applied Mathematics and Nonlinear Sciences 9(1).

Johnstone, A. and P. Marí-Beffa (2018). "The Effects of Martial Arts Training on Attentional Networks in Typical Adults." Frontiers in Psychology 9.

Ju H, Han Z, Gao Y. A Meta-Analysis of the Effects of Taekwon-do on Physical Self-Concept. Percept Mot Skills. 2023 Dec;130(6):2582-2602. doi: 10.1177/00315125231200277. Epub 2023 Nov 2. PMID: 37918019.

Kannus, P. (1999). Preventing osteoporosis, falls, and fractures among elderly people. \_BMJ, 318\_(7174), 205-206.

Kim, j, Dattilo, J, Heo, J, Taekwon-do participation as serious leisure for life satisfaction and health, accessed https://www.nrpa.org/globalassets/journals/jlr/2011/volume-43/jlr-volume-43-number-4-pp-545-559.pdf

Kim, J, Kim, Y, Seo, DC, Han, S, A qualitative investigation of health benefits through a modified Taekwon-do activity among nursing home residents, [accessed via https://link.springer.com/article/10.1186/s12877-023-03749-w]

Kim, S., Kim, Y., & Kim, J. (2021). Effects of Functional Fitness Enhancement through Taekwon-do Training on Body Composition, Physical Fitness, and Blood Lipid Profile in Middle-Aged Women. International Journal of Environmental Research and Public Health, 18(15), 7961. 2

Kim YJ, Baek SH, Park JB, Choi SH, Lee JD, Nam SS. The Psychosocial Effects of Taekwon-do Training: A Meta-Analysis. Int J Environ Res Public Health. 2021 Oct 30;18(21):11427. doi: 10.3390/ijerph182111427. PMID: 34769961; PMCID: PMC8583609.

Kim, D. and Y. Jeong (2024). "Exploring Determinants of Sustained Participation in New Sports: The Impact of YouTube Engagement and Educator Support." Behavioral Sciences 14(10): 914.

Kumar, N. (2024). "How can you improve flexibility and mobility through stretching exercises?| Naya Google."

Kuncoro, A. D., et al. (2024). "The effect of squat, lunges, calf raise and core stability on Taekwon-do athlete balance, Kyorugi category."

Laurin, L. L. (2024). "GRIT personality and sports talent in elite Taekwon-do athletes." Archivos de la Sociedad Chilena de Medicina del Deporte 69(1): 13-23.

Levy, C. "The Importance of Mobility Training: Techniques and Exercises for Improved Flexibility, Injury Prevention, and Athletic Performance."

Li, X., Bae, J.H., Lim, B., Seo, J.W., Sung, Y., Jiang, S., Jamrasi, P., Ahn, S., Shin, C., Pan, M. and Song, W., 2024. Impact of Taekwon-do Training on Cognitive and Physical

Function in Elderly Individuals: A Comprehensive Review of Randomized Controlled Trials. *Complementary Therapies in Clinical Practice*, p.101878.

Linhares, D., Meireles, A.S., Linhares, B.G., Dos Santos, L.L., de Souza Cordeiro, L., Borba-Pinheiro, C.J. and de Souza Vale, R.G., Self-Esteem and Body Image in Older Women Practicing Taekwon-do with Low Bone Density: A Randomized Clinical Trial. *Current aging science*.

Linhares, D & Santos, A & Santos, L & Marcos-Pardo, P & Cordeiro, L & Brandão Pinto de Castro, J & Vale, R. (2022). Effects of taekwondo on health in older people: A systematic review. Retos. 46. 36-42. 10.47197/retos.v46.93336.

Liu, D. and C. Guo (2024). "Exploring the role of traditional martial arts in enhancing physical fitness and health management." Revista multidisciplinar de las Ciencias del Deporte 24(94).

Lu, L. (2024). "Big data analysis of mental health intervention effects in studentathletes: based on data mining techniques and affective computing algorithms." Multimedia Tools and Applications: 1-19.

Manolya Akın et al. (2024), The Effect Of Taekwon-do Training On Static And Dynamic Balance Development: A Brief Review, Educational Administration: Theory and Practice, 30(5), 14491-14496 Doi: 10.53555/kuey.v30i5.6845

Mushtariy, R. (2024). "THE IMPORTANCE OF DEVELOPING STRENGTH ABILITIES IN ATHLETES." American Journal Of Social Sciences And Humanity Research 4(06): 204-207.

Nguyen, C., et al. (2024). "Analysis of Common Exercise Modalities in Improving Athletic Performance in Older Adults: A Narrative Review." Current Sports Medicine Reports 23(6): 245-252.

October, S. "Introduction to Types of Stretching and Mobility Exercises: Overview of Benefits and Techniques."

Oh, J.-S. (2024). "A Study on the Present Condition of Senior Sports and Activation Plan of Silver Taekwon-do." Journal of Industrial Convergence 22(4): 31-38.

Özsarı, A., et al. (2024). "Attitude towards healthy nutrition and mental toughness: a study of Taekwon-do athletes." PeerJ 12: e17174.

Park, S. and S. Son (2024). "A Study on Strategies for Activating Silver Taekwon-do." International Journal of Martial Arts: 24-36.

Park, S. Y., et al. (2024). "Investigating Self-Stretching Impact on Immediately Improved Cognitive Function." The Journal of Korean Physical Therapy 36(3): 110-114.

Pathare, N.C., Kimball, R., Donk, E., Kennedy, K.W., & Perry, M. (2018). Physical performance measures following ten weeks of Taekwon-do training in children: A pilot study. International Journal of Physical Education, Fitness and Sports. https://doi.org/10.26524/ijpefs18330.

Patenteu, I., et al. (2024). "The role of psychological resilience and aggression in injury prevention among martial arts athletes." Frontiers in Psychology 15: 1433835.

Pieter, W., & Pieter, F. (2000). Injuries in adult Taekwon-do athletes. \_Journal of Sports Science and Medicine, 10\_(1), 31-39.

Pons van Dijk, G. (2015). Taekwon-do and physical fitness components in middle-aged healthy volunteers the Sekwondo study. [Doctoral Thesis, Maastricht University]. Maastricht University. <a href="https://doi.org/10.26481/dis.20151029gp">https://doi.org/10.26481/dis.20151029gp</a>

Rafiei Shahrbabaki, S. M. and M. Bagheri Deh Cheshmeh (2024). "Investigating the Relationship between Humor and Stress, Anxiety and Depression in Taekwon-do Athletes of Iran's Premier League." cultural-Social studies of Olympic.

Rodrigues, A. I. C., et al. (2024). "Fighting like a girl: Towards a critical pedagogy of martial arts." Anthology on Martial Arts & Therapy. European Academy of Biopsychosocial Health, in press. Disponível em: https://www.fpi-publikation.de/. Acesso em 10.

Seoyeon, S. (2024). "Effect of Martial Arts Training on Self-Esteem and Discipline in Youth in South Korea." International Journal of Physical Education, Recreation and Sports 2(2): 38-47.

Silva, T., et al. (2023). "The Role of Design and Digital Media in Monitoring and Improving the Performance of Taekwon-do Athletes." Designs 7(6): 130.

Sullivan, D., et al. (2024). "Understanding how to design an engaging hard martial arts programme to improve quality of life among older people: a preliminary study." International journal of therapy and rehabilitation 31(6): 1-12.

Sullivan, D., et al. (2024). "How Does 12-weeks of Taekwon-do Training Effect Older Persons' Functional Fitness: A Preliminary Study." 대한물리의학회지 19(1): 1-10.

Sullivan, D., et al. (2024). "Older persons participation in hard martial arts: Opportunities to improve psychological well-being? A scoping review." International journal of exercise science 17(5): 183.

Uslu, M. and Ö. S. Uslu (2024). "SELF-FORGIVENESS AND SELF-COMPASSION IN TAEKWON-DO ATHLETES: AN APPROACH TO TRAINING AND PERFORMANCE IMPROVEMENT." Conhecimento & Diversidade 16(43): 603-620.

Utkurovna, N. R. and T. K. Sayfiddinovna (2024). "KOREAN MARTIAL ART AND TAEKWON-DO HEALTH." Science and innovation 3(Special Issue 34): 460-463.

Viray, L. A. and M. Lipa (2024). "Assessment of Taekwon-do Training Program: Basis for Innovative Training Design." Psychology and Education: A Multidisciplinary Journal 20(8): 958-974.

Von Bergen, V., et al. "Effects of martial Arts exercise on body composition, serum biomarkers and quality of life in Overweight/Obese premenopausal women: A pilot study."

Wibowo, D. S., et al. (2024). "Psychological support for the mental toughness of Tae kwon do athletes." JUMORA: Jurnal Moderasi Olahraga 4(1): 98-109.

Xinxing L, Jun-Hyun B, Byunggul L, Ji-won S, Yunho S, Shu J, Parivash J, SoYoung A, Chaeyoung S, Mingzhu P, Wook S, Impact of Taekwondo training on cognitive and physical function in elderly individuals: A comprehensive review of randomized controlled trials, Complementary Therapies in Clinical Practice, Volume 57, 2024, 101878, ISSN 1744-3881, https://doi.org/10.1016/j.ctcp.2024.101878.

Zhan, W. (2024). A study on the relationship between taekwondo athletes' psychological capital and athletic achievement. International Journal of Science and Research Archive. 12. 709-717. 10.30574/ijsra.2024.12.2.1247.

Zhijun, L. (2024). "New Trends in Modern Technology and Traditional Martial Arts Teaching." Curriculum and Teaching Methodology 7(6): 1-6.

#### **Web Sources:**

- Medical News Today. (n.d.). Exercise especially important for older people with heart disease. Retrieved from https://www.medicalnewstoday.com/articles/326642
- The Guardian. (2019, March 8). Getting fit in middle age as beneficial as starting early study. Retrieved from
   https://www.theguardian.com/science/2019/mar/08/getting-fit-in-middle-age-as-beneficial-as-starting-early-study
- Martial Arts Over 40. (n.d.). Older adults' path to fitness with martial arts.

  Retrieved from <a href="https://martialartsover40.com/features/older-adults-path-to-fitness-with-martial-arts">https://martialartsover40.com/features/older-adults-path-to-fitness-with-martial-arts</a>
- **Fit and Flexible** (2022, Feb 19) Mental Benefits of Stretching. Retrieved from https://www.fitandflexible.org/blog/mentalbenefitsofstretching

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