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Kampus Sultan Abdul Jalil Shah



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# **THE EFFECTS OF TRAINING MODALITIES ON MOTOR ABILITIES IN KELANTANESE YOUNG TAEKWONDO ATHLETES**

**BY  
NOOR AIWA BINTI ROSMAN**



05-4506832



pustaka.upsi.edu.my



Perpustakaan Tuanku Bainun  
Kampus Sultan Abdul Jalil Shah



PustakaTBainun



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## KESAN MODALITI LATIHAN TERHADAP KEUPAYAAN MOTOR ATLET TAEKWONDO REMAJA DI NEGERI KELANTAN

### ABSTRAK

Tujuan kajian adalah untuk membandingkan kesan latihan terhadap keupayaan motor yang tertentu di kalangan atlet remaja taekwondo rekreasi dengan menggunakan pendekatan tradisional dan juga yang berdasarkan kepada prinsip-prinsip sains sukan. Subjek di pilih secara rawak dari ahli kelab-kelab taekwondo di Kota Bharu dan kawasan sekitarnya (20 perempuan,  $13.01 \pm 2.35$  tahun,  $147.10 \pm 11.41$  cm,  $44.17 \pm 13.84$  kg; 28 lelaki,  $11.93 \pm 2.01$  tahun,  $142.92 \pm 13.95$  cm,  $35.52 \pm 12.66$  kg). Atlet dibahagikan kepada kumpulan kajian dan kawalan. Kumpulan kajian telah di beri program latihan untuk jangka masa 8 minggu. Manakala kumpulan kawalan mengikuti rutin latihan yang biasa dilakukan bersama jurulatih mereka. Komponen kecergasan fizikal termasuk berat untuk tinggi, kelenturan, komposisi tubuh, tekan tubi, bangkit tubi, lompat menegak dan 20 meter larian berperingkat-peringkat (MSFT). Kaedah 'multivariate' dan 'non-parametric' telah digunakan untuk menganalisis data. Tiada interaksi di perolehi antara kumpulan dan ujian ( $p=0.332$ ,  $\eta^2=0.055$ ), kesan antara kumpulan ( $p=0.330$ ,  $\eta^2=0.056$ ) dan juga kesan antara ujian ( $p=0.119$ ,  $\eta^2=0.137$ ) bagi lompat menegak yang telah di skala secara allometrik dan di kawal untuk frekuensi latihan pada selepas ujian untuk perempuan. Bagi lelaki, tiada perbezaan ketara di perolehi di dalam tekan tubi antara kumpulan kajian dan kumpulan kawalan semasa selepas ujian ( $p=0.704$ ). Selepas menggunakan frekuensi latihan semasa selepas ujian sebagai 'co-variate', 'VO<sub>2</sub> max' pada selepas ujian untuk kumpulan kajian







perempuan ( $28.17 \pm 3.35 \text{ ml.kg}^{-1}.\text{min}^{-1}$ ) lebih rendah berbanding dengan kumpulan kawalan ( $32.25 \pm 3.69 \text{ ml.kg}^{-1}.\text{min}^{-1}$ ,  $p=0.002$ ). Walaupun jurulatih bagi kedua-dua kumpulan kajian dan kawalan, pada masa kajian di mulakan, telah memberi jaminan kepada penyelidik bahawa kanak-kanak ini menjalani latihan 3 kali seminggu, analisis kajian mendapati keputusannya berbeza. Oleh sebab itu, perbezaan dalam keupayaan motor di antara kumpulan kajian dan kawalan bagi kedua-dua jantina lelaki dan perempuan berhubung kait dengan frekuensi latihan. Kesan ini tidak di perolehi selepas menggunakan frekuensi latihan sebagai 'co-variate' (kawalan). Penyelidikan pada masa akan datang di cadangkan untuk mengambilkira pendekatan bagi menambahbaik skil yang spesifik di dalam taekwondo. Jika tumpuan adalah untuk meningkatkan prestasi taekwondo pada peringkat tinggi (senior) pendekatan yang menyeluruh dalam meningkatkan keupayaan motor dan skil umum dan juga spesifik bagi sukan taekwondo harus di implementasikan di peringkat akar umbi (junior).





## THE EFFECTS OF TRAINING MODALITIES ON MOTOR ABILITIES IN KELANTANESE YOUNG TAEKWONDO ATHLETES

### ABSTRACT

The purpose of this study was to compare the effect of training on selected motor abilities in young recreational taekwondo athletes using the traditional approach versus one based on sports science principles. Subjects were selected from members of taekwondo clubs in Kota Bharu and surrounding districts (20 girls,  $13.01 \pm 2.35$  years,  $147.10 \pm 11.41$  cm,  $44.17 \pm 13.84$  kg; 28 boys,  $11.93 \pm 2.01$  years,  $142.92 \pm 13.95$  cm,  $35.52 \pm 12.66$  kg). The athletes were randomly assigned to an experimental and control group. The experimental group was given a training program designed for an intervention period of 8 weeks. The control group followed the regular training program by their coaches. Physical fitness components included weight for height, flexibility, body composition, push-ups, sit-ups, vertical jump, and aerobic fitness. Multivariate procedures and non-parametric methods were used to analyze the data. There was no Group x Test interaction ( $p=0.332$ ,  $\eta^2=0.055$ ) and neither were there Group ( $p=0.330$ ,  $\eta^2=0.056$ ) and Test ( $p=0.119$ ,  $\eta^2=0.137$ ) effects for allometrically scaled vertical jump controlled for training frequency at the posttest in the girls. There was no difference in the push-ups between boy experimental and control groups at the posttest ( $p=0.704$ ). After using training frequency at the posttest as a co-variate,  $VO_2$  max at the posttest for the experimental girls ( $28.17 \pm 3.35 \text{ ml.kg}^{-1}.\text{min}^{-1}$ ) were lower than that of the control group ( $32.25 \pm 3.69 \text{ ml.kg}^{-1}.\text{min}^{-1}$ ,  $p=0.002$ ). Although the coaches of both the experimental and control groups, at the onset of the study, assured the





investigator that the children worked out 3 times a week, this was not confirmed by the results. Consequently, differences in general motor abilities between experimental and control groups of both boys and girls were related to training frequency: they disappeared after using training frequency as a co-variate. Future studies should also include an intervention to develop taekwondo-specific skills. If improved taekwondo performance is the goal at the senior level, an all around approach to developing general and taekwondo-specific motor abilities and skills should be implemented at the junior level.



## CHAPTER 1

### INTRODUCTION

Olympic taekwondo is a combative sport characterized by a predominance of kicks to score points off the opponents. The action is extremely fast, often with several techniques being performed in a single combination. The sport is believed to require speed, flexibility, power and endurance. Taekwondo performance is also influenced by a number of other variables, which include psychological state (Chung, Orlick and Pieter, 1997), physiological function (Heller et. al., 1998), sociocultural context (Kim and Pieter, 2000), biomechanical constraints (Pieter and Kim, 2004; Sørensen et.al., 1996) and the environment (Carter, 1985).

Appreciation of athletic profiling provides us with basic quantitative data to better relate the contributing factors that are believed to affect performance. It provides the individual a clear appraisal of the effectiveness of a particular training program in terms of changes to his or her structural, functional and behavioral integrity. The physical alterations brought about by maturity can also be clearly charted over time. It is possible to identify characteristics of endurance, body size and composition, for instance, which would favorably affect performances in specific activities or sports. From this, the scouting, training and monitoring of athletes may be geared towards the most appropriate profile for a particular sport based on those of elite athletes.



As is well known, Korean taekwondo is a modern sport from the twentieth century. In the mid-1950's it was decided to use the name 'taekwondo' for the martial art that was hitherto known under various names (Choi, 1965). Invariably one will read about the "history" of taekwondo in a range of, mostly popular, publications. However, the authors rarely, if ever, seem to give the reader the impression of being aware of (recent) historical research in the area. In the first part of this chapter some of these historical findings will be reviewed. Although they are not at all related to taekwondo, they always appear to be linked to it to give the sport historical legitimacy.

## 1.1 Historical background of taekwondo

### 1.1.1 Hwarang

The first treatise in English on the Korean *hwarang*, a youth group always suggested to have practiced a forerunner of taekwondo, was written by the Jesuit Dr. Richard Rutt in 1961. According to Rutt, the best translation for *hwarang* is 'flower boys', for it is a literal rendition and does not violate Korean and Chinese grammar. Other translations, such as 'flower of youth' (Chun, 1976), 'flowering knights' (Young, 1993), or 'flower of manhood' (Whang et al., 1999) are grammatically incorrect. The concept of the *hwarang* as a military cult did not become well-known until after World War II when the Japanese started to promote their idea of *bushido*, the Way of the warrior (Rutt, 1961).





Our knowledge of the *hwarang* is mainly based on the *Samguk Sagi* (History of the Three Kingdoms), compiled in 1145 by the soldier-statesman Kim Pusik (1075-1152), and the *Samguk Yusa* (Memories of the Three Kingdoms), written by the Zen monk Iryŏn (1206-1289) in 1279. The *Yusa* was based on work now lost (Henthorn, 1974).

The forerunners of the *hwarang* were the *wonhwa* ('original flowers'), a band of women instituted by King Chinhŭng (r. 540-576) in 576. The *wonhwa* were probably shamans or at least shamanistic in nature (Rutt, 1961). Since the rulers were worried that they did not understand their people anymore, two beautiful women, Nammo and Chunjong were selected with some 300 followers, who were taught filial and fraternal piety as well as loyalty and sincerity. Although it is claimed that they assisted in governing the country, no details are provided. However, the two women grew jealous of each other and Chunjong decided to kill Nammo, after which the group dispersed.

According to the *Yusa*, Chunjong was sentenced to death, after which handsome boys/young men were selected, whose primary function was to entertain the court (Rutt, 1961). Yi (1979) suggested that, although it is generally agreed that the *hwarang* originated around the first half of the reign of King Chinhung, they may have existed during the reign of King Pophung (514-540) in 525. However, there is also the suggestion of the *hwarang* having been institutionalized in 562 (Rutt, 1961).





Kim Yusin was probably the *hwarang*, who best embodied the ideal of the group as a military institution (Rutt, 1961). He became a member at the age of 15 and, according to the Yusa, a master swordsman three years later. Characteristics attributed to Kim Yusin were later transferred to all other *hwarang*. He did not become a soldier until he was 34 years, however, but he is credited with fighting in the unification war against Paekche in 660 and in the battle of Pyongyang in 661. He died when he was 79 years old.

Neither the Sagi nor the Yusa claims that the *hwarang* were an exclusively military group. Only the Sagi, compiled by a general, makes mention of the *hwarang* producing military leaders. On the other hand, both the Sagi and the Yusa recount the religious character of the group, which is taken to indicate that any reference to them as mainly a military institution should be viewed with extreme caution (Rutt, 1961).

### 1.1.2 Taekkyon

In addition to the *hwarang*, *taekkyon* is usually presented as being related to taekwondo (Choi, 1972). It is commonly translated as (an art of) 'kicking' (Chun, 1976) or 'foot technique' (Choi, 1972). More than two decades ago no Chinese characters could be found for the name (Pieter, 1981). The significance of this is that classical Chinese was the written language for the Koreans for centuries, while the spoken language was Korean. It was not until the mid-15th century that the Korean alphabet was created and, over time, purely Korean words entered the language, i.e., with no Chinese characters with which to write them.





It is estimated that some 50-60% of Korean words are Chinese loan words (Grant, 1979). In other words, if the word *taekkyon* had been used in ancient texts from before the mid-15th century, it should have Chinese characters. Since none were found, it most likely is a new Korean term.

According to The New World Korean-English Dictionary (1979), *taekkyon* means 'kicking and tripping art (as a sport)'. It does not provide any Chinese characters for *taekkyon*, but instead offers a synonym, i.e., *gakhui*. The first Chinese character with which *gakhui* is written means 'foot' or 'leg', while the second means 'to play'. It was not until Henning's authoritative article published in 2000 that it became clear that the original word was *takkyon* ('push the shoulders'). The author related that the use of *taekkyon* was probably "based on a lack of knowledge of the Chinese characters or an attempt to disassociate it from possible foreign origins". As alluded to above, Pieter (1981) was not able to locate the Chinese characters with which to write *taekkyon* and recent research so far (Pieter, 1994; Henning, 2000) seems to support his claim.

It is often argued that the name 'taekwondo' was chosen for its similarity in pronunciation to '*taekkyon*', which was considered its precursor. The first Korean character in both 'taekwondo' and '*taekkyon*' is the same indeed. Left out of the assertion, however, is that the original word is actually '*takkyon*', the first character of which is totally different from that in 'taekwondo'. *Takkyon* was a game that was also known in Japan in which the participants tried to unbalance or trip each other by leg sweeps or by pushing (Culin, 1895).







Gradually, Confucianistic values were ascribed to the popular game of *takkyon*, so that modern *taekkyon* could be more highly regarded, since it was originally associated with criminals (Ouyang, 1997). Research has shown, however, that *takkyon* probably disappeared as a game soon after the change from the 19<sup>th</sup> to the 20<sup>th</sup> century (Ouyang, 1997).

### 1.1.3 Taekwondo and karatedo

Karatedo was introduced to Korea after the Second World War by Koreans who came back from Japan. They introduced it as either *tangsudo* (the Way of the T'ang hand) or *kongsudo* (the Way of the empty hand) with its concomitant technical arsenal and philosophical orientation, the latter of which was basically Chinese in origin (Capener, 1995). According to Capener, the need to Koreanize karatedo was expressed by changing the name, the development of a set of techniques different from the Japanese original and by attempting to come up with a "history" to legitimize the new sport as uniquely Korean. The name was changed to taekwondo in 1955. Choi Hong Hi, who claimed to be the instigator of the new name, was a member of the committee that agreed to use taekwondo instead of such names as *tangsudo* or *kongsudo* (Kimm, 2000). Choi himself said that there was no taekwondo before Christ (Kimm, 2000), thereby confirming what historical research has shown.

From a technical perspective, the development of the so-called *taeguk* forms was initiated in the early 1970s. These forms were a clear departure from the taekwondo forms as originally practiced by the International Taekwondo





Federation (ITF), which were basically karatedo *kata* (patterns) (Choi, 1965). Contrary to the old and new ITF forms, however, the variety of techniques in the *taeguk* forms is lacking. Another departure from the karatedo-oriented techniques may be found in the sparring component of sport taekwondo and its rules.

The third aspect of the Koreanization of karatedo in Korea, according to Capener (1995), is the creation of a "history" of taekwondo. Several studies on the historical claims of the sport, some of which have been reviewed here, have clearly shown the weaknesses in these assertions.

#### 1.1.4 Conclusion



Based on current historical evidence it seems prudent to conclude that there is no historical legitimacy of taekwondo. According to Capener (1995), "traditional" taekwondo is basically Japanese karate, including its terminology, techniques and training methods. Uniquely Korean, on the other hand, is sport or Olympic taekwondo that would more rightly deserve the connotation "traditional", for it is totally different from karate in terminology, techniques and training methods. It does not have a history dating back to the era before Christ and is also not based on Chinese philosophy the way karate is. It was developed as a modern sport in the 1960s and 70s. Just like any other sport, winning is paramount and competitors may rely on sport scientific support to optimize their performance (Pieter and Heijmans, 1997; Bompa, 1999).







## 1.2 Historical development of taekwondo in Malaysia

According to the website of the Malaysia Taekwondo Association (<http://www.mta.com.my>), the sport was introduced to this country in 1963 by the late General Choi Hong Hi, who was the then Korean Ambassador to Malaysia. That same year the Selangor Taekwondo Association was formed with the earliest clubs founded in Kuala Lumpur. As was the case in many other countries, Korean nationals were responsible for the training of Malaysian practitioners and running the Selangor Taekwondo Association.

Although taekwondo in Malaysia was initially associated with Choi's International Taekwondo Federation, which was founded in 1965 (Choi, 1965), the formation of the Persatuan Taekwondo Malaysia (Malaysia Taekwondo Association, MTA) was started in 1972 with its official inauguration in April 1974. Representatives from Selangor, Angkatan Tentera Malaysia, Perak, Pahang, Negeri Sembilan, Terengganu, Johor and Sabah attended this inaugural meeting. The MTA became a member of the World Taekwondo Federation, which was formed in 1973 in Korea as an alternative to the older International Taekwondo Federation, whose headquarters had subsequently moved to Canada. The MTA today has affiliates in all the states of Peninsular Malaysia, East Malaysia, Police, Armed Forces and Universities Sports Council. It was recognized by the Olympic Council of Malaysia in 1978 (<http://www.mta.com.my>).





### 1.3 Purpose of the study

Despite its popularity in Malaysia (the MTA boasts a membership of 100,000) (<http://www.tkdmalaysia.blogspot.com>), scientific research on taekwondo is scarce. Training is still conducted along traditional lines, even though attempts have been made to introduce sports science into the national coach education program (Song, et al., undated publication) Initial descriptive research on Malaysian male taekwondo athletes showed that there were no differences in sit-ups, vertical jump and flexibility between junior ( $15.90 \pm 1.20$  years) and senior ( $21.20 \pm 1.23$  years) competitors (Suzana and Pieter, 2004a).

Internationally, Malaysia has been successful in taekwondo at the Southeast Asian Games but it is not competitive at the Asian, world and Olympic levels. The purpose of this study, therefore, was to compare the effect of training on selected motor abilities in young recreational taekwondo athletes using the traditional approach versus one based on scientific training principles. The former is characterized by what the coach learned previously, generation after generation, without systematically manipulating the training principles of frequency, intensity, time or duration and the mode of exercise as is recommended for a scientific method of training (McArdle et al., 1996).

### 1.4 Objective of the study

To assess selected motor abilities in young taekwondo athletes as a result of different training modalities.





It is anticipated that small to medium effect sizes will be detected relative to the training modalities used.

### 1.5 Significance of the study

Preparing taekwondo athletes for competition requires systematic and methodological planning of their training. Training may be defined as a process of stimuli that are goal-oriented and planned to enhance athletic performance. These stimuli are of a physical, psychological, technical, nutritional and tactical nature. Physical stimuli are those that bring about changes in physical appearance as well as in functional efficiency (Pieter and Heijmans, 1997).



The lack of scientific research on taekwondo exponents in Malaysia might be related to the lack of success the sport has experienced internationally. At the basis of any sport performance at the senior level, however, is a solid developmental stage. Therefore, the information that will be provided by this investigation will greatly add to the current body of knowledge by augmenting the prevailing insufficient local database. It will also offer the state and national taekwondo associations an opportunity to establish the infrastructure and programs needed to detect and develop talent from a scientific perspective.

### 1.6 Delimitations of the study

Within the framework of this study, the influence of the coaches on the implementation of the training program could not be controlled logistically. This





was also the case for the influence of the coaches of the control group and the adherence to the a priori agreed-upon regular training program.

It was logistically not feasible to visit the training sessions in the districts. As a result, only the centralized workouts of both groups in Kota Bharu were monitored.

No attempt was made to control for the food intake of the children during the period of study.

No attempt was made to control for any psychological, socio-cultural or other correlates believed to play a role in the relationship between training and motor abilities.

