The Study of Biomechanics of the Axe Kick & Manage Weight Athlete's Taekwondo

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***Abstract*—Biomechanics of the Taekwondo Axe Kick: The axe kick in Taekwondo has been observed to be a highly effective offensive and defensive technique. Its purpose is to attack the opponent's head, collarbone or chest with a powerful downward force. However, few researchers have studied the biomechanics of this kicking technique. The modified competition rules of World Taekwondo (WT) on the number of points to the head resulted increase in the number of kicks to the head by athlete's taekwondo using the axe kick in India both biomechanics Axe kick and manage weight.**

Therefore, it is important to know the biomechanical principles of the axe kick for executing the kick in India effectively with minimum injury to the opponent's head, collarbone or chest and for scoring maximum number of points in a competition. The main purpose of this article is to present a general description, variations and biomechanics of the Taekwondo axe kick and you've just lost weight and you don't want to see that number go back up on your scale.

Although gaining the weight back might feel inevitable, it doesn't have to be. In fact, a recent analysis by the National Weight Control Registry found long-term weight maintenance is possible — if you follow these key behaviors. Below, dietitians and successful dieters who were able to lose and weight and keep if off. Americans are obsessed with faster, better, bigger and quicker ways of doing things. While it might be a good thing in certain areas, it might not be so when it comes to losing weight.

It is natural for anyone trying to lose weight to want to lose it very quickly, evidence shows that people who lose weight gradually and steadily of 1-2 lbs. per week have a better chance of keeping weight off. Selected Ingredients in Dietary Supplements for Exercise and Athlete Performance as manage weight athletes Taekwondo.

RELATED: The Hidden Ways Sleep Deprivation Can Lead to Weight Gain.A Review. *J. Hum. Sport Exerc. 10*(1), pp.141-149. Mailapalli, D.M., Benton, J., & Woodward, T.W.

***Index Terms*—TAEKWONDO, AXE KICK, BIOMECHANICS, SAFETY, WEIGHT MANAGE, ATHLETE's TAEKWONDO, ATHLETE PERFORMANCE, INGREDIENTS.**

I. INTRODUCTION

Taekwondo is an ancient art of unarmed combat that includes kicking, punching and way of life. The name 'Taekwondo' is derived from the Korean words, 'Tae' meaning foot, 'kwon' meaning fist, and 'do' meaning the way of. So, literally 'Taekwondo' means 'the way of foot and fist'. The name 'Taekwondo' was coined in 1955 while the arts' Korean roots began in 2,300 BC. The physical training through kicking and punching is what makes Taekwondo unique among other styles of martial arts and the way of life through practicing the tenants of Taekwondo: courtesy, integrity, perseverance, self-control and indomitable spirit. Currently, Taekwondo is widely practiced by 70 million people in 190 countries (Kim). Martial arts theories tend to be heavily rooted in tradition, and as such have not been biomechanically analyzed to the same degree as more modern sports such as swimming, gymnastics, and cycling (Pieter). Choi, states that Taekwondo techniques are based on the laws of physics and propose the "theory of power" as a basis for Ideal technique. The first attempts made at delivering a scientific biomechanical description of the martial arts techniques began in the 1960s.

Taekwondo can be grouped as swing, thrust and combined kicks based on their kinematic Characteristics of kicking (Kim & Hinrichs, 2006).The swing kicks (e.g. front kick, axe kick), which attempt to hit the front of an opponent in a straight movement, the thrust kicks (e.g. side kick) are performed by Rotating the body towards the side of the opponent (front of the opponent faces side of the attacker) with Body rotation directed to the side of the opponent, the combined kicks are performed with both

thrust and Swing motion (e.g. hook kick). The swing kick is used to maximize the speed of the foot at impact. The thrust kick is used to generate large forces at impact. The combined kick is used to generate both high Speed and large forces. Swing kicks have highest speed. (13.5 meters/second [m/s]) followed by combined and thrust kicks (Kim & Hinrichs)

TAEKWONDO AXE KICK

To execute the axe kick, the fighter brings up his/her kicking leg in a linear/circumrotation, and at the peak Height brings the heel or ball of the foot straight down (like a downward movement of an axe) (Figure 1) upon the opponent's head, shoulder or chest. Another use for the axe kick is to stop an incoming attack.

The fighter can target an axe kick against the supporting thigh of an opponent in the initial stages of a kick.

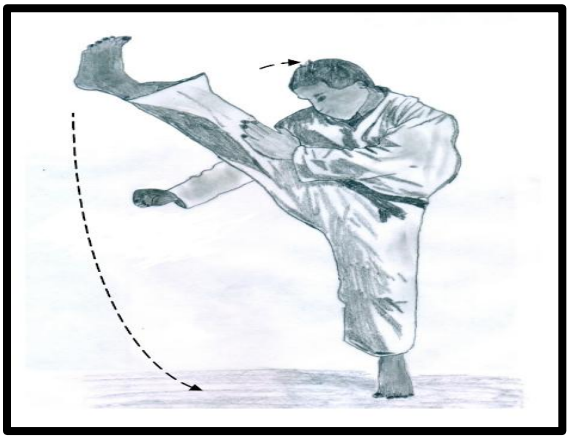

Figure 1. Axes kick execution during power load.

WEIGHT MANAGEMENT

Weight management is a long-term approach to a healthy life style. It includes a balance of healthy eating and physical exercise to equate energy expenditure and energy expenditure and energy intake. Developing healthy eating habits while using tips that will keep us fuller longer can be useful tools in weight management. Knowing what your body needs is important to weight management and control overconsumption of food.

Weight management does not include fad diets that promote quick, temporary weight loss. It focuses on the long-term results that are achieved through slow weight loss, followed by

A) Retention of an ideal body weight for age.
B) Sex and height.
C) Body development & Endurance Capability.
D) Nutrition's and Balanced diet

Rising obesity rates are a major concern in North America. About 60% of Canadians are overweight or obese. Obesity is a risk factor for many chronic diseases such as Type 2 diabetes, hypertension and cardiovascular disease. Managing one factor in preventing such chronic disease.

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FIG.1 Weight Control.

Fig.2 Diet & Healthy Food.

Purpose of the Study

The focus on individual intervention approaches and delivery in these biomechanics of the axe kick, without consideration of the manage weight is both a strength and a limitation. Because much of the available review evidence focused at these two levels of competition, the resulting most effective and promising practices are based on the best available evidence within this level, which is strength, but only when considering optimal conditions for weight management.

There were limited data available on biomechanics for axe kick weight management athletes; this is why we excluded them from this synthesis. However, the importance of this level of the competition; this is an area of research that has been neglected in favor of individual interventions. This is likely to be attributable in part to the significant cost of implementing interventions of this type, as well as difficulties inherent in evaluating complex

interventions and the lack of consensus on what should be measured. In other words, without a better understanding of the causes of obesity, along with the creation of biomechanics of the axe kick, can we really expect individual attempts at weight management to be completely successful across a number of levels competitions of influence, not just at the level of the individual, to improve obesity management across the improvise athlete's taekwondo.

II. METHODOLOGY

Biomechanics is one of the sub disciplines of kinesiology and by definition it is the study of the application of mechanics to biological systems such as human systems. The Biomechanics performance-related areas include measurement and motor control of human locomotion, sports, clinics and rehabilitation, Orthopedics, among others.

The biomechanical factors instrumental to the success and effectiveness of an axe kick are based on the three aspects of the kick:

1) The maximum target height
2) The inertia of the kicking leg and
3) The speed of the kicking foot.

The height at which an athlete can make an attack is determined by the anthropometry of the fighter (e.g. body height and leg length) and the flexibility of the fighter. For an axe kick to be effective, all movements of the kicking leg need to have minimal execution time. Thus the dynamic posture /kinematics of the kick should minimize the moment of inertia of the kicking leg during the power load phase.

The power of the axe kick is directly determined by the speed of the kicking foot, as it drives downward toward its target. Thus the degree of extension of the kicking leg and its angular velocity should maximize the speed of the kicking foot.

Based on these aspects, Woo et al. reported that front axe kick has maximum kicking height compared to other variations of the kick (Table 2). Yu et al measured total action time as 0.66 sec for the front axis kick (Table 3). Tables 2 and 3 also
present the other parameters in the biomechanics of the axes kick.

PARAMETER MEASUREMENT

The key in this kicking technique involves hip flexibility, muscle power and whip-like movement.

These components account for differences between professional and advanced fighters. Researchers have shown a 15% difference observed in action time, 12% in maximal kick height and 20% in maximal drive ankle speed (Yu et al.).

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Table 2. Features of an axe kick without wearing a chest gear (Woo et al)

Type of axe kick	Height (m)	Foot speed(m/s)	Shoulder speed (m/s)	Hip flexion (°)	Shoulder range of motion (°)
Front axe kick	1.76	7.91	2.7	146.96	71.83
In-out axe kick	1.74	7.72	3.0	150.95	71.45
Out-in axe kick	1.72	7.41	2.93	145.55	68.93

Table 3. Biomechanical parameters in the axe kick performed by the professional (Yu et al)

	Parameter	Measurement
Flexibility	Maximum kick height (% of body height)	137.1%
	Angle between the thighs (°)	173.5
Kinematics of the power load	Range of motion of the hip (°)	206.1
	Range of motion of the knee (°)	99.6
	Duration of power load (s)	0.35
	Maximum speed of ankle (m/s)	11.4
Kinematics of the drive	Range of motion of the hip (°)	139.1
	Duration of the drive (s)	0.31
	Maximum speed of ankle (m/s)	10.9
Action	Total time (s)	0.66

III. RESULTS

Biomechanics maximum velocity at the moment of impact Axe kick is usually achieved at the cost of attack duration. In case of board breaking, athlete requires maximum velocity at the moment of impact (faster attack) at the cost of lower attack duration. For obtaining points in sports competition, athletes should focus on reducing the duration of the kick and increasing mean kick velocity.

The Taekwondo axe kick may be performed to generate maximum momentum on impact, but this may not be advisable in terms of safety. Athlete of most effective and/or promising practices have therefore emerged from this review athlete's taekwondo including the use of web-based technologies to support traditional models of care and the importance of a long-term approach to weight management.

IV. DISCUSSION

The Taekwondo axe kick may be performed to generate maximum momentum on impact, but this may not be advisable in terms of safety. Athlete of most effective and promising practices have therefore emerged from this review athlete's taekwondo including the use of web-based technologies to support traditional models of care and the importance of a long-term approach to weight management.

V. CONCLUSIONS

In Taekwondo Biomechanics Axe kick and manage weight athlete, like any martial arts, fast reactions are essential for success in competitions. The quicker athletes react, the more time they have to accomplish their strategy. Therefore, Taekwondo athletes should not only use those techniques that allow them to react fast but also the techniques where they need the least time to reach the opponent.

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