

Conditioning For Taekwon-do

(V dan thesis)



Submitted to:

International Taekwon-do Federation
10th April 2005

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Requested Grading Date:

Master Choi, Jung Hwa Master Class
Leicester, England 24/25 Sept 2005

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Introduction

Excerpt from *Encyclopaedia of Taekwon-do*, Third Ed 1993, published by the *International Taekwon-do Federation*:

Cycle of Taekwon-do



“Taekwon-do is composed of fundamental movements, patterns, dallyon, sparring and self-defence techniques that are so closely related that it is impossible to segregate one phase of instruction from another”

This thesis will serve to elaborate on one particular item of the Cycle of Taekwon-do – Dallyon. Dallyon is interpreted as “maintenance of equipment” which can refer to either the toughening of attacking/blocking tools, or more generically, the conditioning of the entire body to prepare for the rigours of Taekwon-do. This part of Dallyon i.e. conditioning for Taekwon-do is an area that, while crucial for top performance, is sometimes neglected or improperly applied by practitioners. The author will attempt to put in perspective, and demonstrate the importance of the various factors of dallyon that can assist any Taekwon-do student to yield the best performance possible.

Section 1: Overview

The principal factors of conditioning are:

1. Aerobic endurance and anaerobic endurance
2. Core body strength (principally abdominal, lower back muscles and hip flexors)
3. Strength of the extremities (i.e. limbs, chest, shoulders, upper back).

Aerobic endurance is the foundation upon which one should build all the other types of conditioning.

Aerobic endurance and anaerobic endurance

Aerobic endurance (also known as cardiovascular endurance) can be simply defined as the ability of the heart and lungs to provide enough oxygen to the other working muscles of the body during intense activity. This should not be confused with anaerobic endurance, which is the ability of the body to produce energy for the muscles in short, speedy bursts where the heart and lungs do not have enough time to deliver the needed oxygen. Aerobic exercise increases aerobic endurance, anaerobic exercise increases anaerobic endurance. There are certain sports which are anaerobic in nature, e.g. 100m sprint, weightlifting, boxing. However each of these sports requires the athlete to develop and maintain a base level of aerobic endurance before commencing intense anaerobic training. This is because anaerobic efforts result in waste products such as acids, which build up in the muscle tissue. These acids can quickly lead to muscle fatigue and cramp. The higher the level of aerobic endurance, the quicker these acids can be reduced or eliminated from the affected muscles.

The importance of aerobic endurance

Apart from the obvious health advantages, aerobic endurance in sports is important mainly because it affects how quickly an athlete recovers from intense efforts. *To get the skill, you need to drill. No drill-no skill.* (Kurz 2001). The faster you recover between the drills, the more you can drill. Also the higher the aerobic endurance, the more intense is the effort at which energy is produced anaerobically. In other words, the higher the aerobic endurance one has, the later fatigue occurs and the longer one's punches and kicks can be crisp and sharp.

For example, during a Taekwon-do bout, periods of high activity, such as a quick assault of kicks are followed by a short period of lowered activity. During these periods the combatants breathe deeply, oxidising the build-up of lactate (a product of anaerobic metabolism), and this lets them recover partially. In sparring one can build up a great oxygen debt, and the better aerobic shape one is in, the more effectively one can pay back this oxygen debt.

If there is a subsequent bout to be had in a tournament, the greater the aerobic endurance of the fighter, the quicker will be his/her recovery for the next round.

How to develop aerobic endurance and anaerobic endurance

The absolute minimum for developing aerobic endurance is twenty to thirty minutes of aerobic efforts twice to three times a week. However, the intensity of training is the key. During exercise, one's metabolism does not just switch from aerobic to anaerobic, but is merely an overlap of the two with one system providing more energy than the other. Dr. Philip Maffetone, named Coach of the year by the American *Triathlete* Magazine, proposes the following formula for focusing on aerobic training without intensifying into anaerobic efforts. *If a person deducts his/her*

age from 180, this will give the heart rate known as the blood-lactate threshold for that person.

This threshold is the heart rate at which lactate starts to build up in the bloodstream as your metabolism starts to become more anaerobic. If the heart rate is kept below this level, then the efforts will be mostly aerobic. The most effective way to do this is to use a heart rate monitor while training, to be aware of the intensity of exercising continuously. Any activity that raises the heart rate to the aerobic zone will suffice, such as rowing, running, shadowboxing, etc. To develop anaerobic endurance, interval training is ideal. One should exercise intensely for short periods of time then lower the activity for the same or an increased duration, then repeat the cycle a number of times. E.g. jog comfortably for two to three minutes to prepare the body, sprint for thirty seconds then jog for one minute, and then repeat....

Core body strength

The muscles known as “the core” are the posture stabilising muscles, i.e. lower back (erector spinae), abdominal (rectus and transversus abdominus), and hip flexors (psoas major and minor). It is primarily these muscles that maintain correct body alignment when doing any exercise, e.g. a squat. The importance of developing these areas cannot be underestimated. Embarking on any serious strength-training program but having weak core muscles leaves an athlete open to serious back injury. The reason for this is thus: during any strenuous lift, the stabilisers are put under immense stress to maintain correct posture, e.g. erector spinae. If they are too weak, they will give way under the stress. Also, the hip flexors, which are involved every time a kick is thrown, generate a huge amount of the power in the kick. If the hip flexors are weak, then the kicks will never attain their full potential power. To get the best from the core muscles, work on developing these areas should be done early on in a program, while developing aerobic endurance.

Examples of beginner exercises for the lower back for Taekwon-do practitioners are back extensions on the bench. Progressing to more functional strength exercises like good mornings or deadlifts leads to more functional strength, which is useful for grappling or lifting. Functional exercises are exercises designed to be appropriate to the needs of daily activities or sports (King 2000). Children should do back extensions on the floor with alternate arms and legs. Lifting both arms and legs simultaneously can cause damage to their lumbar vertebrae (Drabik 1996).



FIG 1: Athletic Taekwon-do kicks like Flying Twin Foot Side Piercing Kick (Twimyo Sangbal Yopcha Jirugi) require excellent abdominal and lower back strength.

What exactly is strength training?

Strength training, also known as resistance training, involves lifting (or resisting) a weight. (The most obvious example of a resistance training weight is one's own body weight.) The concept is that by increasing muscle mass and the strength of muscle fibres, a body can exert greater forces than it otherwise could.

Who should strength train?

Quite simply, everybody should, regardless of whether they do Taekwon-do or not.

Why?

In everyday life correct strength training can lead to the following benefits:

1. Improved circulation.
2. Reduced risk of injury e.g. from lifting a heavy object.
3. You will look better.
4. Increased metabolism, therefore more calories are burnt daily.
5. Increased bone density, therefore less risk of bone damage and osteoporosis (in women)

In Taekwon-do, specifically, some of the benefits are:

1. Greater striking power.
2. The body can absorb more punishment, and drill harder.
3. Improved jumping ability-crucial for Taekwon-do practitioners.
4. Increased flexibility - strong muscles can stretch more.
5. Increased muscular endurance.

How to go about it

It is important to work on developing the five major areas of the body i.e. upper back, shoulders, chest, front of legs, rear of legs. Compound exercises should be used because they work more than one muscle group at the same time. These are time efficient and work the muscles in a natural way. Examples are squats, military press, bench press, etc. The student must be careful not to fall into the trap of trying to solely work or isolate small muscles, e.g. biceps or triceps with bodybuilding exercises. This will not assist Taekwon-do training because there is no isolation in natural movements.

What is so important about strengthening those five areas of the body?

Here is a summary of their main functions in Taekwon-do. The chest muscles (pectorals) are used when you punch, block or throw a ridge-hand strike. They are also used in grabbing, throwing, and sweeping techniques. The deltoids (side, front and back of shoulders) are extremely important for punching. The upper back muscles (mainly Latissimus Dorsi) are used for grabbing and/or pulling (Cho, 1998). The main arm muscles, biceps and triceps, act as assistants for the previous three groupings. The main lower body muscles that need to be strengthened are quadriceps, hamstrings, calves, adductors, abductors, and gluteals. These muscle groups are all heavily involved in kicking and jumping. Furthermore, strong lower body muscles can help to achieve front and side splits with little or no warm-up (Kurz 1998).

Exercises to start with

As previously mentioned, it is important to do compound exercises so the student can stress a number of muscle groups at once. One should also become very comfortable at lifting own body weight (the ultimate free weight) before moving on to dumbbells and barbells. Doing squats, lunges, etc. with body weight only or minimal weight (broomstick or empty light bar), allows one to develop correct form, balance, and timing for the lifts - skills that transfer to other movements. **Children and younger teenagers should not use additional weights under any circumstances, as their**

bodies are not sufficiently developed to withstand those stresses. However teenagers who have passed the growth spurt (normally about fourteen or fifteen years of age) can use dumbbells for exercises permitting not less than fifteen repetitions (Drabik 1996). In any case, everyone should train to be strong enough to do more than fifty repetitions of the above exercises with their own body weight.



FIGURE 2: Interval training by throwing fast kicks for 2-3 minute rounds with 30 second rest is ideal for developing anaerobic endurance.

Section 2: Developing Functional Strength

Introduction

We now know from the previous section why strength is vital in Taekwon-do - it helps the practitioner to avoid injury and improves performance in many ways. Functional strength is not the same as general strength however, as only functional exercises can develop functional strength. As mentioned previously, functional exercises are exercises designed to be appropriate to the needs of daily activities or sports (King 2000). This section will serve to point out the many pitfalls of strength training routines that Taekwon-do practitioners undertake in the belief that their performance will be enhanced. Unfortunately this is often not the case, as strength developed from one movement is not necessarily transferred to another movement. For instance developing strong quadriceps from doing the leg extension exercise will not necessarily increase the power in a front kick. This is because the power generated by the kick is only proportional to the weakest muscle controlling the movement, i.e. the weakest link in the chain. The body is a linked system that works together to coordinate athletic and everyday actions (Goldenberg and Twist, 2002).

Strength can be divided into the following categories each of which can lead to functional strength depending on the choice of exercises) (Starzynski and Sozanski. 99)

1. **General strength** (developed by doing general strength exercises, e.g. squats) – not specific for a particular sport and improves the whole body.
2. **Directed strength** (developed by doing directed strength exercises, e.g. medicine ball throws) – strength in movements similar in form to the sport movements.
3. **Sport-specific strength** (developed by doing sport-specific strength exercises, e.g. using bungee cord to provide resistance to actual techniques) – the strength required to provide power in actual movements of a particular sport.

Preparation

The three types of strength should be developed in the above order, beginning with non-specific, general exercises that strengthen the body as a whole. This serves as a foundation for exercises, which develop strength for certain motions. The route to functional strength should be based on the following guidelines:

- Train body weight before external resistance
- Train movements, not muscles
- Train stabilising muscles before prime movers.
- Train basic movement skills before sport-specific skills
- Train core strength before extremity strength

These points should be elaborated on:

Strength training should always be started using your body weight for resistance before using additional weights. The reasons are as follows:

1. If you can't lift your body weight in exercises, then you are not ready for external weight.
2. Muscle fibres strengthen quicker than muscle connective tissue, tendons and ligaments, which can tear if put under immense stress. Therefore doing preparatory exercises with a low resistance (body weight) and a high volume

strengthens these areas, which are only strengthened with “chronic activity of an endurance nature” (Kurz 2002).

3. Muscle fibres are divided into fast twitch and slow twitch fibres (McArdle, Katch and Katch 2001). High intensity exercises fatigue and develop the fast twitch fibres, however it takes high volume, lower intensity activity to fatigue the slow twitch fibres, which provide the muscular stabilisation for the joints.

Train movements not muscles: This refers to the “linked system” (also known as kinetic chain) of the body mentioned in the introduction. All joints and muscles of the body work in unison in functional exercises. No joint or body part works in isolation in any Taekwon-do movement (or any other sort for that matter). The body’s kinetic chain involves deceleration at one joint and acceleration at another joint in the chain. Training individual muscles is useless because they cannot produce sports movements in that fashion (Gambetta)

Train stabilising muscles before prime movers. When doing strength exercises the stabilising muscles are required to maintain correct posture which helps to prevent injuries. For example: when doing squats, the knee stabilisers prevent the knee from bending inward or outward. If the stabilisers are too weak to perform this function, then injury is risked.

Train basic movement skills before sport-specific skills. In any sport involving complex technique, it is important to develop the motor cortex in a gradual way, starting with simple exercises and progressing to complex ones. Not only does this help the learning curve, hence allowing the student to progress at his/her own pace, but it also helps the student to avoid plateauing, by learning sport specific skills too early.

One should start any strength-training program with exercises for the core of the body refers to the lower back and abdomen. If a student is out of shape, he/she should start with crunches and back extensions on the ground, eventually progressing to sit-ups and back extensions on the bench (with or without weights plates). These will then lead to advanced core exercises such as lying leg raises and deadlifts. Once the core is sufficiently strong to provide stability, the student can progress to developing the upper back, chest, shoulders, legs and hips.

The plan in action

Now that we have discussed what’s involved in developing functional strength, it is time to progress to some exercise suggestions. General strength can be developed by doing a few cornerstone exercises:

Squats, lunges	-	lower body
Chest press, flies	-	chest
Chin-ups, rowing exercises	-	upper back
Military press, reverse flies	-	shoulders

It should be noted that all of the above exercises are free-weight exercises. Vern Gambetta states the following; “*a fundamental criterion for selecting a strength training exercise is that it should incorporate movements that are multi-plane and multi-joint and where possible include diagonal rotational patterns. The application of these criteria effectively eliminates most machines that are used in strength training because they are designed to isolate muscles and work in single joint, single plane movements. The type of strength developed with weight machines and isokinetic devices is not readily transferred to sport performance. This type of strength can interfere with coordination patterns and cause strength imbalances that predispose the athlete to injury because there is little functional demand on the proprioceptive*

and synergistic function of the muscles”. An illustration of this would be a comparison of a leg extension or leg curl machine with a free moving exercise such as a step-up or lunge. The leg extension or leg curl machines are single joint exercises that isolate specific muscles. A step-up or lunge is a multijoint exercise that involves balance, stabilisation and provides functional strength. The use of dumbbells as a means for developing functional strength is highly recommended. Plisk (1993) states the following reasons:

1. They demand greater muscle synergy because they must be stabilized individually.
2. Bilateral strength imbalances are minimized because you cannot shift them or compensate to one side.
3. Effective range of motion is greater.
4. The dumbbell tracks in a natural groove which accommodates to the desired movement pattern. Dumbbells, free weight training and body weight exercises develop balance, stabilization, joint proprioception and kinesthesia which all relate to function both in terms of injury prevention and performance enhancement.

While the above listed exercises are suitable as a beginning, for the Taekwon-do student, these need to be developed further to really enhance performance. Remember, the goal of lifting weights is to gain stronger and better performance, not to lift heavier weights. This is where directed strength exercises come in:

Lower body example: A perfect example is doing one-leg squats (see figure 3), because when a student kicks, it is usually with one leg. These squats also help develop maximum balance and stability abilities in the practitioner. Once the practitioner has developed sufficient abilities in the one-leg squat, the next stage would be to develop sport-specific strength practicing kicks against resistance, e.g. bungee cord (figures 3,4), to strengthen the kicking muscles for the actual techniques being used.



FIGURE 3

Upper body example: A bench press with dumbbells can be used to develop general strength, progressing to throwing a medicine ball for developing directed strength. Sport specific strength can be developed by doing bag work as the impact on a punch bag helps to develop specific functional strength/power for either punches or kicks.



FIGURE 4



FIGURE 5

Section 2: Developing Explosive Strength

Definition: Explosive power (or explosive strength) is the ability to rapidly increase force (Tidow 1990). The steeper the increase of strength in time the greater the explosive strength. Explosive strength is exhibited when doing a punch or kick.

While strength is a measurable phenomenon in terms of force produced, explosive power is placed between strength and speed (Starzynski and Sozanski. 99) and cannot be developed by doing strength exercises alone, but by a combination of speed, strength and speed-strength exercises.



FIGURE 6: Explosive power is demonstrated by the penetrating force of dwitcha jirugi on the focus shield.

Training for speed:

Speed is the ability to perform movements in the shortest time period. The usual way of training for speed is by repeating movements with maximal velocity, while adhering to the following principles;

1. The technique must allow performance of the movement at extreme speed.
2. The technique must be sufficiently developed so that the practitioner can concentrate on the speed component.
3. A limit of repetitions must be set in advance so that the velocity and forms of the techniques are not affected by fatigue.

Speed exercises should be done immediately following a warm-up, at the beginning of the main part of a workout.

Training for strength:

This area has been covered thoroughly in the previous section, but in regards to explosive power, certain points should be noted. It is recommended to avoid excessive hypertrophy (muscle build-up) as it increases the amount of body mass that needs to be moved (Starzynski and Sozanski. 99). The athlete should concentrate on maximising neuromuscular co-ordination. The pace of exercises is what determines the results. *A fast pace “reduces” resistance by taking advantage of the momentum*

but improves neuromuscular coordination. A slow pace “increases” the resistance by eliminating the momentum of the weight and thus developing hypertrophy (Pawluk 1985). The pace also influences the amount of repetitions possible in a set which has a bearing on the strength and hypertrophy results.

The following effects on strength and hypertrophy, as a result of repetitions per set, are taken from Thomas Kurz’s *Science of Sports Training, How To Plan And Control Training For Peak Performance, 2nd edition: Kurz cites references to Matveev, 1991 and Wathen, 1994.*

- Working out with resistance that maximally permits four to six repetitions increases strength without considerably increasing mass. With these heavy loads the hypertrophy is confined to fast-twitch fibres.
- Resistance allowing eight to twelve repetitions increases muscle mass. Each repetition should be done at a slow to moderate speed.
- Resistance allowing more than twelve repetitions at a slow to moderate speed develops muscular endurance with little hypertrophy. These exercises done at a fast pace help develop explosive strength.

Plyometrics:

It would be impossible to discuss the development of explosive power and not mention plyometrics. Plyometrics involves various exercises to mobilise the inherent stretch-recoil characteristics of skeletal muscle and its modulation via the stretch reflex (McArdle, Katch & Katch). Plyometrics exercise overloads a muscle to provide a forcible and rapid stretch immediately before the shortening phase of action. According to McArdle, Katch & Katch; *a plyometric drill uses body mass and the force of gravity to provide the all important rapid prestretch or “cocking” phase to activate the muscles natural elastic tendencies.*

A practical example would be as follows; rather than jumping from a sprung position, try doing it twice and spring back into the air for a second jump as part of the rebound of the first jump. More force is produced in the second jump as a result of the muscle contractions from the landing of the first jump. In most textbooks plyometrics usually only apply to jumping exercises, however, they can be applied to the upper body quite easily, e.g. clap-pushups, or catching and throwing a medicine ball with as little time as possible between the two actions.

Apart from plyometrics, other means of developing speed-strength are doing a set number of strength exercises in a set time period, e.g. thirty body-weight squats in thirty seconds. Such an exercise can leave residual soreness but also has a very positive training effect (Gambetta).

Sets should be repeated until the athlete can no longer complete a set in the given time frame (Starzynski and Sozanski. 99)

Conclusion of this section

Developing functional strength and superior explosive power is a necessary goal for Taekwon-do practitioners constantly seeking to improve performance levels. However, careful planning is important and good information crucial. Many of the reference texts contain a great deal of information on the subject and are well worth further study.

Section 4: The Ideal Structure of A Workout

Having discussed, the proper exercises and programs the students should develop, it is important to discuss the practical side – when the exercises should be done in a workout. An efficient workout can be defined as a physiologically justified sequence of exercises assembled together to achieve a particular task (Kurz, 2001) Some training sessions will be dedicated to Tul, sparring, etc. This section will deal with the logical structure of a workout that involves both conditioning and technical training.

A well-designed workout consists of the following:

1. Setting the goal(s) of the workout.
2. The general warm-up including cardiovascular warm-up and general stretching.
3. The specific warm-up where movements resemble more closely the actual contents of the workout.
4. The main part of the workout.
5. The cool-down.
6. Reviewing and analysing the accomplished goals of the workout.

The workout should start off at a low intensity and gradually increase to the highest level, when, finally, the intensity decreases towards the end of the workout. If there is a major drop off of intensity during the main part that allows cooling down, followed by intense exercise, it will be difficult to mobilise for work again. Performance will be impaired and there is a risk of injury. An example of this risk would be to interrupt kicking exercise to do stretches like the splits.

→ Intensity Increasing → → → → Intensity Decreasing →

General Warm-up → Specific Warm-up → Main Part → Cool-down

Warm-up

Warming up has to prepare all systems of the body in order to train at top efficiency. It has to affect the heart, blood vessels, nervous system, muscles and tendons, and the joints and ligaments. The goals of the warm-up are an improved elasticity and contractibility of the muscles, greater efficiency of the respiratory and cardiovascular systems, better concentration, and improved coordination, amongst others. All these changes occur when the body temperature is increased by muscular effort. The warm-up should start with exercise of low intensity and then progress to the intensity of the exercises that are the main subject of your workout. Do not start a warm-up with high-intensity exercises as these quickly use up stores of muscle glycogen, reducing the ability to train effectively in the main part of the workout. A warm-up should last between 15 to 25 minutes depending on the main task and intensity of the workout.

General Warm-up:

The general warm-up should start with five to ten minutes of aerobic activity. Flexibility improves with increased blood flow in the muscles, so stretches should

follow. Most martial artists are used to performing static (or relaxed) stretches at this point, such as splits, etc. While these exercises lead to great gains in flexibility, doing them at this point in the workout interrupts the flow of the warm-up, by going from *high intensity*→*low intensity*→*high intensity*. Remember, the goal of a warm-up is to improve coordination, elasticity and contractibility of muscles and breathing efficiency, none of which can be achieved by static stretching. Ideally, dynamic stretches should be used (Mierzejewski, 1996 & Kurz, 1998) which, because of the effort required, continue the ideal progression of intensity and prepare the muscles for the sudden contractions during kicks and punches. Dynamic stretches are leg swings to front, side, and back, as well arm swings. Leg swings should be done in sets of ten to twelve repetitions per leg. Arm swings are to be done in sets of five to eight repetitions. One should do as many sets as it take to reach full range of motion in each direction. Usually for properly conditioned martial artists, one to two sets is enough.

Specific Warm-up:

The more intense the planned your workout is to be, and the lower the surrounding temperature - the more need to warm-up the muscles. Warming up should involve a gradual increase in the intensity of exercises. Toward the end of the warm-up, when it is specific, movements should be used that resemble closely the techniques to follow. For example, if the plan is to practise dollyo chagi (See figure 7) or variations of it, then the warm-up should end with low intensity dollyo chagi, focusing on the quality of the technique. Then gradually the height, speed, and power of the kicks can be increased.



FIGURE 7: Kicks like Dolly Chagi require a vigorous warm-up as described in the section *Specific Warm-up*

Main Part

The order of the exercises in the main part is just as crucial as the order in the warm-up. Generally, more difficult techniques should be practised before more intense ones. Also, new skills should be practised/learnt before practising known skills or conditioning exercises. Speed exercises should be done before dynamic strength exercises (e.g. press-ups), dynamic strength exercises before static strength

exercises (e.g. isometric tensions), and long-duration endurance exercises (e.g. running) should be done at the end of a workout.

The optimal sequence of tasks in the main part is:

- A. Learning a new technique or skills.
- B. Speed or co-ordination exercises.
- C. Strength exercises.
- D. Endurance exercises.

→ Intensity Increasing → → → Intensity Decreasing →
Technical → Speed → Strength → Endurance → Cool down

There are very logical reasons for performing the exercises in the given sequence. Technical training such as perfecting a kick, block, etc should be done early in the workout for a number of reasons; the mind is fresher allowing greater concentration on the task at hand, conditioning exercises fatigue the muscles and impair co-ordination hence making it difficult to perform technically demanding routines afterward. Doing endurance exercises prior to strength exercises reduce the benefit of the strength exercises, whereas doing them afterward allows partial recovery of the fatigued muscles. The routine of exercises in the strength part of the workout is also important. The main rule to follow here is: never fatigue the stabilisers before the prime movers. This is to avoid reducing the effectiveness of the workout or risking injury. E.g. if you plan to do press-ups and sit-ups in a workout, do the press-ups first. This is because in the press-up position the abdominals support the lower back, keeping the body straight. If you do the sit-ups first, the abdominals would be less able to provide support for the back while doing the press-ups. As a general rule, work the major muscles groups first leaving the small assistant/stabilising muscles till last i.e. chest before arms, upper back before arms, quads/hamstrings before adductors/abductors. On a final note, always leave abs and lower back till the end.

SIDE NOTE: For those that dedicate a workout to a single task, be it technical training, strength training, etc, the weekly plan should be outlined along the same guidelines as a single workout to derive maximise benefit. Arrange workouts in a weekly cycle as follows; technical workout - first, speed workout - second, strength workout – third, endurance workout - fourth. One can omit a certain workout, but should not change the order of the content, or a preceding workout would reduce the effectiveness of the following one. The series can be repeated in a weekly cycle if desired.

Cool-down

When the main part of the workout is over, it is then time to cool down, gradually lowering the intensity of the exercises until sweating has stopped and breathing feels normal. It is good to end a cool-down with walking. Walking vigorously and swinging the arms in a heterolateral (opposite arm and leg) pattern reorganises one neurologically and relieves stress. If the workout is held indoors the walk can be done outdoors for an even better effect. Jogging or walking outdoors is best for speeding up your recovery and calming down after a workout. It is not always practical after class but it is ideal after training at home or the gym.

When the student is breathing normally (s)he should do some static stretching, consisting of isometric stretching followed by relaxed stretches or just relaxed stretches. These stretches relax the muscles after training, relieving muscular spasms, and encouraging recovery from the workout. Spending a reasonable time doing the relaxed stretches allows an increase in flexibility to develop, particularly following a strength workout – tired muscles are more susceptible to stretching as they tense less and so cannot resist the stretches as much. Minors (u-18 years) or pregnant women should not do isometric stretches.

After all of the exercises of the cool-down the student should review the objectives for the workout and evaluate the results.



FIGURES 8 & 9: Relaxed stretches should be done as part of a rational cool-down to aid recovery and relieve any spasms in the muscles.



Appendix 1

The Military/Shoulder Press



The shoulder press (also known as the military press) can be done with either a barbell or dumbbells. It is one of the best exercises that can be done for the upper body (along with bench press, rowing exercises, deadlifts) as it works multiple joints and muscles. It primarily targets the upper and middle deltoids as well as the upper back. The triceps act as assistant muscles. The military press has a strengthening effect on the whole body as so many muscles are involved in stabilisation.

The main points are as follows:

- Always relax the shoulders, and don't lift them up towards your ears.
- Don't wiggle your body in an attempt to lift a heavier weight.
- Don't force the weights upwards with too much force as this can strain the elbows.

The exercise should be performed as follows:

1. Starting position - Feet are shoulder width apart, knees slightly bent, keep abdomen tight to protect lower back, ensure that the body is completely upright, the bar is held at the height of (but not resting on) your collar bone.
2. Raise the bar (keeping it parallel to the ground) above the head, allowing for the natural arc in the movement. Keep the elbows slightly bent at the end of the movement. **DO NOT LOCK THE ELBOWS.**
3. Lower the bar in a controlled manner, returning to the starting position.

Appendix 2

The Bentover Row



The bent over row is an excellent exercise for the upper back. The main muscles worked are the latissimus dorsi, trapezius, rhomboids, forearms and biceps. Your lower back (erector spinae) and abdominals are also heavily used as stabilizers. Because working the upper back requires lifting fairly heavy weights it is essential that the exercises be done safely (i.e. carefully and slowly).

The exercise is done as follows:

1. Starting position: bend forward from the waist, keep the knees slightly bent and feet shoulder width apart with toes pointing slightly outward. The arms hanging loosely down supporting the weight with an overhand grip. Your back should maintain the natural lordosis (or curvature)
2. Raise the bar by pulling with the back muscles, bring the bar to the bottom of your rib cage.
3. To return to the starting position, slowly lower the bar in a controlled fashion.

Remember the following points:

- Although your arms are moving, this is a back exercise. Concentrate on pulling from your back muscles rather than just moving your arms up and down.
- Keep immobile at the waist so you don't strain your lower back. Always tighten your abdominals when lifting weights to protect your lower back.
- Don't allow your back to sag towards the floor or hunch up.
- Don't jerk the weight upward.

Appendix 3

The Deadlift



The deadlift is an excellent strength exercise for the lower back. It also strengthens the hamstrings, gluteals, latissimus dorsi, trapezius muscles, and arms. It is because of the training effect the deadlift has on so many muscle groups and joints, that it is considered a *compound exercise* (see previous newsletter issues for more explanation). It also is an exercise that will lead to functional strength necessary for everyday activities as well as in the martial arts. Basic strength should be developed with back extensions on the floor and on the bench before progressing to the deadlift.

The exercises is performed as follows:

- The barbell is gripped with one palm inward and opposite palm outward. The legs can be straight (stiff-legged deadlift) or slightly bent. The back should be straight with the head looking forward/downward at an angle.
- The barbell is raised using lower back movement only, and keeping the bar close to the legs, until the body is completely upright.
- The barbell is lowered again to allow repetition of the exercise.

Appendix 4

Squats



The squat works pretty much every muscle in the lower body from the gluteals right down to the soleus (deep calf). It is an excellent exercise for not only improving lower body strength, but also overall body strength. It also helps to develop balance and stability (provided it is done with a barbell and not a Smith Machine). The squat can also be done with dumbbells, with the following disadvantages; the weight you can carry will be less due to the limited strength of the arms, and it does not result in the same increase in bone density. The former is actually an advantage for teenagers doing strength training, as it helps prevent them from overloading the spine.

- (a) Start position - bar resting on shoulder blades. Keep knees bent, feet shoulder width apart with toes pointing slightly outward if desired, back straight, abdominal muscles tensed to protect lower back.
- (b) Lower to final position while maintaining the natural lordosis of the back and keeping the heels on the ground.
- (c) Return to the starting position by pushing up through the heels (not ball of foot). Do this slowly to develop general strength. It can be done faster to develop functional, explosive strength for Taekwon-do

Appendix 5

It is vital to, when performing any abdominal (ab for short) exercise to maintain a neutral head position i.e. keep your head in line with your spine. Do not press your chin to your chest. Flexing the neck excessively will cause neck pain, which can lead to injury and will definitely reduce the enjoyment of your training.

All ab exercises must be performed in a controlled manner - no jerking and throwing yourself into the movement.

The lower back must remain in contact with the floor at all times (except when doing reverse curls). This is usually only a problem when lowering yourself to the floor. Prevent your back from arching by tightening the abs as you lower yourself.

Hand positions can vary but NEVER clasp your hand behind your head as this normally causes the neck to flex which results in pain.



Breathe out as you are contracting your abs and breathe in as you relax. Remember, it is best to both inhale and exhale through your nose—not your mouth.

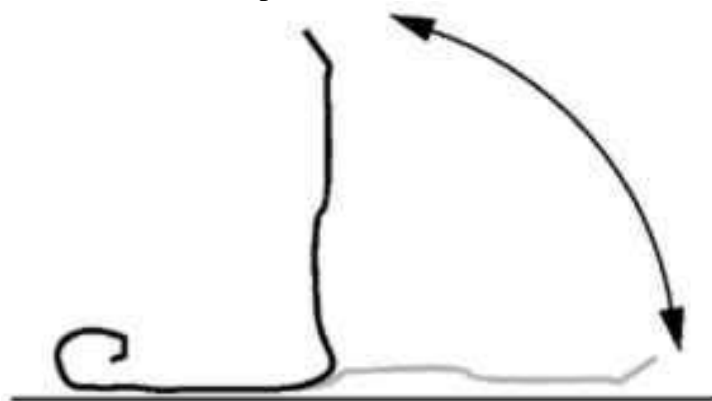
Full sit-ups normally cause lower back and neck pain. It is better to replace these with alternatives such as crunches, which involve taking the shoulders 30-45 degrees from the floor. Coming slightly higher will emphasise the hip flexors as well as the abs.

Strong abdominals greatly help posture and to prevent injuries to the lower back. However don't forget to strengthen the lower back also. (See page 2 for one of the best exercises for the lower back.)

Abdominal exercises will strengthen, tone and define your stomach, but you must decrease the body fat from that area if you want to see the results of your effort. This can only be achieved by regular aerobic exercise

For Taekwon-do strengthen, in conjunction with each other-abs, lower back and hip flexors.

Hip flexors can be strengthened by doing leg raises lying supine, or hanging leg raises. For supine leg raises, juniors should raise one leg at a time to prevent excessive pressure on the lower spine.



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Portfolio



Training History

Name: Shane Fitzgibbon
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 Instructor: Mr Don Dalton, VI
 Association: Irish United Taekwon-do Federation
 Training: Began training in 1988 in South West Taekwon-do Centre
 Tested for 1st degree under Master Norman Creedon, Ireland
 Tested for 2nd degree under Master Norman Creedon, Ireland
 Tested for 3rd degree under Master Jose Goma March, The Gambia,
 West Africa
 Tested for 4th degree under Master Trevor Nicholls, Oakville, Canada
 IUTF Position: Member of the Executive Committee
 Instructor of Galway Taekwon-do Academy, Oranmore TKD
 Academy, Gort TKD School, Coosan TKD School, Ballybay
 TKD School
 Current Irish Men's team Captain
 IUTF Grading Examiner
 Irish Female Junior Team Coach 2005

ITF Courses Attended

Year	Course	Venue	Instructor
2005	International Instructor Course	Atlantic City, USA	Master Choi, Jung Hwa
2005	Tul Seminar	Tralee, Ireland	Mr Bhupinder Sahota
2005	Tul Seminar	Galway, Ireland	Mr Bhupinder Sahota
2004	Tul Seminar	Tralee, Ireland	Mr Bhupinder Sahota
2004	Tul Seminar	Kanturk, Ireland	Mr Bhupinder Sahota
2004	International Instructor Course	Belgium	Master Choi, Jung Hwa
2004	Fundamental Exercises	Galway, Ireland	Master Trevor Nicholls
2004	Tul Seminar	Tralee, Ireland	Master Trevor Nicholls
2003	Tul Seminar	Cork, Ireland	Mr Toni Martella
2003	Fundamental Exercises, Step Sparring	Tralee, Ireland	Master Robert Wheatley

Tournament Achievements

Tournament Entered	Division/Category	Awarded
Munster Championships, 2005, Tralee, Ireland	1. Patterns 2. Sparring	Silver Gold
WKA Germany Vs Ireland, 2004	Team Sparring	Gold
Irish Championships, 2004 Cork, Ireland	Patterns	Gold
Celtic Cup, 2004	Team Sparring	Gold
ITF World Championships, 2004 Daejeon, South Korea	Team Patterns Team Power	Bronze Bronze
Leinster Championships, 2003 Dublin, Ireland	Sparring	Bronze
Celtic Cup, 2003 Cork, Ireland	Team Sparring	Bronze
Master Choi's International Cup, 2002 Oakville, Canada	Sparring	Bronze
IUTF Irish Championships, 2001, Cork, Ireland.	1. Black Belt Patterns	Silver
IUTF Munster Championships, 2002, Tralee, Co. Kerry, Ireland.	1. Black Belt Patterns 2. Black Belt Individual Sparring	Gold Gold
Leinster Open Taekwon-do Championships, 2000 University College, Dublin	1. Black Belt Patterns	Gold
West African Taekwon-do Championships, 2000 Bakau, The Gambia. NOTE: Team Captain	1. Black Belt Individual Sparring 2. Black Belt Patterns	Gold Gold
<i>Taekwon-do International: Ireland</i> Irish Championships 1999 Cork Institute of Technology	1. Red/Black Belt Sparring, Heavyweight	Gold
Munster Open Taekwon-do Championships 1999 Killarney, Co. Kerry	1. Red/Black Belt Sparring, Heavyweight 2. Red/Black Belt Patterns	Gold Gold
Fundraiser Fight Day 1999 Cobh, Co. Cork	1. Black Belt Sparring	Gold
<i>Taekwon-do International: Ireland</i> Irish Championships 1998 Cork Institute of Technology	1. Black Belt Individual Sparring 2. Black Belt Patterns	Gold Gold
West African Taekwon-do Championships, 1998 Bakau, The Gambia. NOTE: Team Captain	1. Black Belt Team Sparring 2. Black Belt Team Patterns 3. Black Belt Individual Patterns	Gold Gold Silver
British Taekwon-do Championships 1997 Glasgow, Scotland	1. Black Belt Patterns 2. Black Belt Individual Sparring	Bronze Gold
Taekwon-do International: Ireland Vs. International Taekwon-do Union: Wales, 1998 Cardiff, Wales	1. Black Belt Team Sparring 2. Black Belt Team Patterns	Gold Gold

Tournament Entered	Division/Category	Awarded
<i>Taekwon-do International: Ireland</i> Irish Championships 1997 Cork Institute of Technology	1.Black Belt Individual Sparring 2. Black Belt Patterns	Gold Silver
<i>Taekwon-do Ireland</i> Cork Taekwon-do Championships 1997, Macroom NOTE: Team Captain	1. Black Belt Team Sparring 1. Black Belt Team Patterns	Gold Gold
<i>Global Taekwon-do International: Ulster</i> Irish Open Taekwon-do Championships 1996 Belvedere College, Dublin	1.Black Belt Individual Sparring 2. Black Belt Patterns 3. Destruction/Board Breaking	Gold Bronze Gold
Kerry Youth's Open Martial Arts Championship 1996, Tralee, Co. Kerry	1.Black Belt Individual Sparring 2. Black Belt Patterns	Silver Gold
Ireland Vs. Britain 1995 Cork Institute of Technology	1. National Team Sparring	Gold
British Taekwon-do Team Championships Worcester, England	1. International Black Belt Team Sparring, Heavyweight	Gold