CURRENT RESEARCH AND COMPILATIONS IN SPORTS SCIENCES

EDİTÖR:
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Dr. Öğr. Üyesi Özge Baydar Arıcan
Dr. Öğr. Üyesi Didem Gülçin Kaya

EĞİTİM
yayınevi

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POOL AND LAND TRAINING FOR SWIMMERS

Musab ÇAĞIN[1], Zeren ÖZKURT[2], Özlem ORHAN[3]

SWIMMING

Swimming is a sport that enables a person to move through the water with various movements of the hands, arms, feet, legs, torso and head by using the buoyancy of the water (Adıyaman, 2006). Sportive swimming consists of the athlete completing the specified distance in the shortest time by using any of the four styles. These styles consist of freestyle, backstroke, breaststroke and butterfly swimming styles (Hannula & Thornton, 2001). Freestyle is the fastest swimming style among the styles. Freestyle is followed by butterfly, backstroke and breaststroke in terms of speed (Maglischo, 2003).

Freestyle: It is completed with a right arm pull and a left arm pull accompanied by a 2-4-6 repetitions of the foot stroke. The number of repetitions of the foot stroke varies from athlete to athlete. As there are differences in the repetitions of the foot stroke, there may be differences in arm techniques in long and short distance swimmers. Long distance swimmers put their arms in the water at the furthest point they can reach, pull and push the water to the back (last) point they can push and pull

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the water. Short distance swimmers have less reach than long distance swimmers (Bozdoğan, 2006).

Backstroke: There are two main differences that distinguish the backstroke swimming style from other styles. These are; it consists of backstroke swimming instead of prone swimming like other swimming styles. Since the mouth does not enter the water, the athlete does not have difficulty breathing. The other difference is that the backstroke swimming style is the only swimming style in which the head is fixed. It is similar to freestyle in terms of coordinated repetitive numbers of feet and arms. It consists of the movement of the feet up and down with the feet slightly turned inward and the knees slightly bent. As much as the athlete is in the supine position, the body turns slightly to the side in arm throws and pulls and progresses with foot strokes (Maglischo, 2015). When the arm enters the water, it tries to enter from the last point it can reach. It follows many different stages from the entry of the arm into the water to its exit. While one arm enters the water, the other arm exits the water and is completed in a coordinated manner (Bozdoğan, 2003).

Breaststroke: In breaststroke swimming style, the legs are lower than in other styles. Breaststroke swimming style is the swimming style in which the swimmer is most exposed to the resistance of the water and swims the slowest (Maglischo, 2003). Unlike other styles, it is the swimming style with the most friction. The arms are stretched forward and then the feet are pulled towards the hips while pulling. With the pulled feet and arms, the swimmer breathes during the arm movement and puts the head back into the water, the arms extend forward and the feet are struck outward in a circular manner. In breaststroke swimming style, foot strokes are more important than in other styles (Bozdoğan & Özüak, 2003). Breaststroke swimming style, which is the only circular movement in arm and leg movements among swimming styles, is different from other styles (Bozdoğan, 2006).

Butterfly Swimming Style: Butterfly swimming style is a swimming style that emerged with the development of breaststroke swimming style (Günsel, 2011). Butterfly swimming style is just behind freestyle in terms of speed. In this style, which is swum prone, the legs are closed, the feet are side by side, and the inside of the feet are turned slightly inward, with an up and down stroke. This special foot stroke is referred to as "dolphin". Just like the simultaneous movement of the feet, the arms also move simultaneously. The arms come out of the water at the same time, enter the water from the outside forward and take their old place by drawing the "S" shape in the water. The time the swimmer's head exits and enters the water is important in the movement of the arms. The swimmer's head enters the water before the arms and exits the water after the arms. In butterfly swimming style; arms, feet, legs, torso and head move in a coordinated manner (Bozdoğan, 2003).

SWIMMING PHYSIOLOGY

As in every sport, in swimming, the athlete consumes oxygen, the vessels grow, muscle mass, pulse rate, number of breaths taken and many similar factors increase. The main difference that distinguishes swimming from other sports is that it is practiced in a horizontal position. Since swimming is practiced in a horizontal position, the athlete's circulatory system works more comfortably and better. With the circulatory and cardiac system of swimmers working more regularly, the athlete encounters hisrostatic pressure while swimming. This hisrostatic pressure helps to regulate and balance the swimmer's blood pressure and ensures that their blood pressure is more balanced than athletes engaged in other sports branches. Since the swimmer swims in a horizontal position, oxygen goes up to the upper part of the lungs during breathing in and out. In this case, swimmers have a more developed vital capacity ratio than people who are engaged in other sports branches. Vital capacity refers to the maximum amount of air exhaled after the

maximum amount of breath taken (Gökhan et al., 2011).

In swimming, training is planned specifically for each athlete. Some physical changes occur in the athlete. In order to get the best efficiency from these physical changes, it is necessary to create special, regular, planned, programmed and sufficient trainings for the athlete and to apply these trainings to the athlete. It is necessary to improve the performance in special trainings applied to the athlete and to show the developed performance. There are some factors that are necessary in swimming to show sportive performance. Some of them are muscle strength, anaerobic power, flexibility, endurance and some other factors (Gün, 1991; Çağın et al., 2023).

ANTHROPOMETRIC CHARACTERISTICS OF SWIMMERS

These are; height measurement, body weight measurement, biacromial shoulder width measurement, sitting height measurement, stride length measurement, standing long jump measurement, medicine ball throw measurement, grip strength measurement, leg and back strength measurement, arm length measurement, leg length measurement, hand length measurement, foot length measurement, determination of number of arms and determination of number of feet.

Height Measurement: It consists of measuring the height of the swimmers in cm with a scale that maintains its validity. Swimmers stand against a wall. The measurement is made with the soles of their feet on the ground (without slippers) and their shoulders and heads upright (Uğurlu, 2022).

Body Weight Measurement: The body weight of swimmers is measured with a scale that is valid and measured in kilograms. Measurement can be performed with swimsuits that do not weigh the swimmers. Swimmers stand on the scale barefoot, without any clothes on, girls only in their swimsuits and boys only in their shorts. Swimmers stand upright on the scale and wait until the number in kilograms is fixed on the screen and complete the measurement (İlbak & Bayer, 2021).

Biacromial Shoulder Width Measurement: The swimmer stands on a flat and balanced surface with head, torso and shoulders fixed, feet close together and heels touching, and arms free. The maximum shoulder width of the swimmers is measured with a measuring device placed on the lateral part of the acromion, which is a part of the shoulder bone (Çıkmaz et al., 2005).

Sitting Height Measurement: When measuring the sitting height of the swimmers, all swimmers are asked to stand with their backs to the wall. Then the swimmers are asked to stand in a sitting position with their hips touching the wall. At this stage, the swimmer's head, back and shoulders are upright and their hands are on their knees. In this way, the distance between the top of the swimmer's head and the hip point of the swimmer standing on the wall is taken and this distance is called sitting height (Özer, 2006).

Measurement of Stroke Length: Tape measures are used to measure stroke length in swimmers. This measurement may require a table with a flat and stable surface. The swimmer can use one of his/her two hands. During the measurement, the swimmer opens the distance between his/her fingers and puts them on the table or a fixed place and the distance between the swimmer's thumb and pinky finger is measured and recorded in cm with the help of a valid instrument (Espano et al., 2008).

Measurement of Standing Long Jump: The measurement of swimmers' standing long jump is done with a meter whose validity is accepted by everyone and measured in cm. For this measurement, the person who will make the measurement determines a certain line for all swimmers to start equally and at the same point. All swimmers start the measurement by standing behind this line. With the command given by the person making the measurement, the swimmer whose jump length will be measured bends down and jumps forward with his/her knees slightly bent and his/her arms thrown back. The swimmer is asked not to move, and then the distance between the starting line determined by the measurer and the swimmer's

heels at the place where the swimmer jumps with both feet is measured with a meter (Sevim & Şengül, 1989).

Medicine Ball Throw Measurement: The measurement of medicine ball throwing in swimmers is done with a meter whose validity is accepted by everyone and measured in cm. In this measurement, the swimmers to be measured are lined up in a line. A starting point is drawn on the ground by the measurer so that each swimmer starts at the same place and it is fair. The swimmer whose turn it is moves to the starting point determined by the measurer. The swimmer stands with both feet side by side in the same alignment directly behind the starting point. A medicine ball is given to the person to be measured. The swimmer holds the medicine ball with both hands, takes it to the back of his/her head and tries to throw the medicine ball as far as he/she can towards the front. After the swimmer throws the medicine ball, the distance from the starting point to the point where the medicine ball arrives is measured and recorded in cm (Ateş et al., 2007).

Grip Strength Measurement: Grip strength measurement in swimmers is performed with a hand dynamometer, whose validity is accepted by everyone and measured in kg. Swimmers are asked to stand on a flat surface. They do not have anything to weigh on their hands or arms. They are asked to grasp the instrument to be measured with their dominant hand and squeeze it with maximum force. At the end of the measurement, the result in kg is recorded.

Leg and Back Strength Measurement: The measurement of leg and back strength in swimmers is performed with a back and leg dynamometer whose validity is accepted by everyone and measured in kg.

Arm Length Measurement: Swimmers' arm length is measured with a meter whose validity is accepted by everyone and measured in cm. Swimmers line up and wait for the command given by the measurer. Swimmers lean against a flat wall with their faces facing each other. The swimmer opens

his/her right arm to the side and leans the opposite side of the palm against the wall. The measurer starts from the swimmer's middle finger and measures the distance between the shoulder blades with a meter in cm.

Leg Length Measurement: Leg length measurement in swimmers is done with a meter whose validity is accepted by everyone and measured in cm. Swimmers stand in a line and wait for the command given by the measurer. Swimmers stand in anatomical position in turn. The distance between the ground and the troctanterion of the swimmers standing in the anatomical position is measured in cm and recorded.

Hand Length Measurement: The hand length of the swimmers is measured with a meter whose validity is accepted by everyone and measured in cm. Swimmers line up and wait for the command given by the measurer. Swimmers take turns placing their hands on a table with a flat and stable surface and keeping their fingers stretched open. The measurer looks at the swimmer's tense hand and fingers, then measures and records the interval in cm from the starting point of the swimmer's wrist and middle finger (Akın et al., 2013).

Foot Length Measurement: Foot length measurement in swimmers is done with a meter whose validity is accepted by everyone and measured in cm. Swimmers line up and wait for the command given by the measurer. Swimmers take turns at the place determined by the person who will measure. Swimmers are measured while standing. The swimmer places any foot he/she chooses on the ground determined by the person who will measure him/her in a fixed and flat position without any shoes, slippers on his/her feet. The distance between the end of the heel of the swimmer who puts his/her foot on the ground and the beginning of the longest part of the toes is measured and recorded in cm (Özer, 1993).

Determination of Arm Count Measurement: Determination of arm count in swimmers is done in the pool. This measurement made in the pool is a 50-meter measurement.

The 50-meter swimming performances of the swimmers are recorded with a camera or phone. Swimmers take turns to go to the measurer, say their names to the camera or phone and enter the pool in turn. At the command of the measurer, the 50-meter swimmers are recorded with the specified swimming style. The measurer slows down and speeds up this recording as desired, counting the number of arms the swimmer throws in 50 meters.

Measurement to Determine the Number of Feet: Determining the number of feet in swimmers is done in the pool. This measurement in the pool is a 50-meter measurement. The 50-meter swimming performance of the swimmers is recorded with a camera or phone. Swimmers take turns going to the measurer, saying their names to the camera or phone and entering the pool in turn. At the command of the measurer, the 50-meter swimmers are recorded with the specified swimming style. The measurer slows down and speeds up this recording as desired, counting the number of feet the swimmer swims in 50 meters.

THE IMPORTANCE OF STRENGTH IN SWIMMING

To move through the water, swimmers apply a force that counteracts the resistance of the water. Without this force, swimmers cannot stay on the water. As in every sport, strength is the basic element for athletes in swimming. With the trainings applied specifically for sports branches, positive development occurs in many parameters such as increase in muscle strength, speed, flexibility, endurance and balance (Günay et al., 2006). In order for adolescents engaged in sportive swimming to perform well in the water, they should demonstrate a strength and put it into practice. Swimmers use almost all of their body to demonstrate strength. The increase in strength in the arms and legs that work more actively improves the swimmer's performance positively (Geyik, 2019). The positive increase in the performance of swimmers plays an important role in changing their ranking in the race they will participate in (Faigenbaum et al., 2002). Strength training in swimmers plays

an important role in both increasing performance and protecting the athlete against injuries. The place of strength training is important in sportive swimmers (Kraemer & Fleck, 2005).

STRENGTH TRAINING IN SWIMMING

Strength training in swimming is divided into two as training in water and training on land (Tanner, 2007). Training on land improves the performance of the swimmer. The important point of land training is to develop a training program specifically for each swimmer and to do it in accordance with the level and capacity of the swimmer (Garrido et al., 2010). Land training is important for the development of performance swimmers. It is important for swimmers to gain the necessary strength, power and speed (Newton et al., 2002). Swimmers are divided into styles in terms of applying and displaying the power gained. Since certain parts of the body are used more actively than other parts in each style, it is important to use the strength gained correctly (Kraemer & Fleck, 2005). Since the upper part of the body works more intensively in swimmers, injuries occur because the adduction of the arm and internal rotation of the shoulder are used in certain styles (Batalha et al., 2018). It is possible to reduce and eliminate these injuries with various strength training in swimmers. Swimmers should give the necessary importance to pool and land training both for performance improvement and to prevent possible injuries (Salo & Riewald, 2018).

STRENGTH TRAINING IN THE POOL

Exercises with Resistance Tires: Resistance tires used in water are described as a study that is applied to athletes by many coaches today and yields efficiency. The main reason for the application of resistance tire training is due to the strength training in the environment where the swimmer is. The swimmer can do strength training in the water without making any changes in the stroke or style. The swimmer can choose from freestyle, backstroke freestyle, butterfly freestyle, breaststroke freestyle and breaststroke freestyle and do strength

training with the resistance tire. The resistance tire should be of a certain length and tension. It is attached to a fixed surface or a helper has the tip of the tire. The other end of the resistance tire is connected to the swimmer's waist and this work is done to swim against resistance or to swim faster. Since the swimmer will get tired during the training, errors in their technique and the specified times should be taken into consideration (Crowley, 2022).

Power Tower Exercises: This exercise used in the water is supported by coaches for the development of the athlete. A belt is attached to the swimmer's waist and the other end of the belt is attached to a system located on a fixed ground outside the water. This system is a roller system and can be adjusted to the weight desired by the swimmers. It is important that this roller system, which remains behind the swimmer, remains stable when the swimmer starts to swim forward by applying resistance to it. This exercise, which has an important place in the strength training of swimmers, can be used in all styles including freestyle, backstroke freestyle, butterfly freestyle and breaststroke freestyle (Juarez et al., 2013).

Parachute Swimming: Parachute swimming equipment is attached to the swimmer's waist with a belt or similar elastic. In parachute training, the length of the tire between the belt attached to the swimmer's waist and the parachute fabric can reach 4-5 meters. This parachute, which is behind the swimmer in the water, is a type of training that opens against the resistance created by the water when the swimmer starts swimming and weighs the swimmer. The swimmer can develop the upper and lower extremities by applying resistance at the same time with parachute training (Gourgoulis et al., 2019).

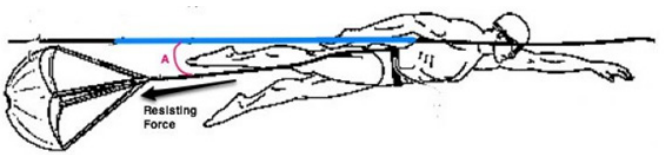


Image 1: Parachute Study (URL-1)

Vertical Resistance Training: Vertical resistance training, which can be done with a medicine ball and many similar tools, is important in the strength development of the swimmer. The swimmer holds the medicine ball above his/her head with his/her arms straight without touching anything in the Olympic pool and at the same time makes a foot strike. What needs to be done here is to maintain the swimmer's own vertical position and increase the maximum capacity time to stay in that position.

MAD Study: The MAD device is a special device developed exclusively for swimming (Pardos et al., 2019). This device is 0,8 m below the water, but it is a device with 16 apparatus fixed at 1,35 m intervals extending 23 m straight along the lane. While the swimmer applies this strength training, he/she continues by pushing himself/herself with his/her hands from the 16 apparatus fixed. Swimmers with pullboys between their legs are asked to push themselves only with the help of their hands. The force applied to 16 fixed apparatus is recorded with a force transducer. It is seen how much force the swimmer applies with the recorded thrusts (Formosa et al., 2012).

Force Studies with Swimming Equipment: There are various swimming equipment. Among the equipment frequently used by swimmers are pullboys and hand fins. Since the upper extremities of swimmers work more than the lower extremities, swimmers reduce leg movements with the pullboys they wear between their legs. They contribute to the development of the upper extremity by loading the upper extremity more with the hand palette they wear on their hands (Tsunokawa et al., 2019).

Strength Training with Equipment that Increases Drag Effect: Although swimming with clothes is seen as endurance training, it is actually seen as strength training because it shows more resistance with increased friction and increased dragged weight (Crowley, 2020).

STRENGTH TRAINING ON LAND

Strength Training with Body Weight: It is performed as a strength training applied with the resistance of the swimmer to his/her own weight without any weight. It is recommended for swimmers who are just starting land training (Soydan, 2006).

Classical Weight Strength Training: Classical weight strength training, also known as weight lifting, involves performing the movement appropriate to the lower or upper extremity region desired by the swimmer with the selected weight and the desired repetitions (Hartmann & Tünnemann, 1989).

Core Strength Training: With the development of core muscles, more force is produced in the lower and upper extremities of our body. With improved core stabilization, swimmers can progress faster in sprint swimming (Weston et al., 2015).

Strength Training with Elastic Exercise Bands: Exercise bands, which are frequently used by swimmers, are used for many purposes. Although it helps to increase the variety of movements after injury, the main purpose of use is to improve the strength and mass of the muscle being worked on, and it can work many joints efficiently (Page and Ellenbecker 2005).

Strength Training with Theraband: Theraband is one of the strength exercises that swimmers and athletes involved in most sports branches use as a broadcast in land training. Theraband is used individually for swimmers according to its tension and color. Swimmers who use the theraband in land training show positive improvements in various parameters such as endurance, balance, strength and flexibility, while many joints can work at the same time (Yolcu 2010). Theraband has many areas of use in the lower and upper extremities and the swimmer can work with theraband in any region (Page and Ellenbecker 2005).

Table 1: Theraband (Yolcu, 2010)

THERABAND COLOR	RESISTANCE LEVEL	STUDYING LEVEL
Skin Color	Very thin	Beginning
Yellow	Thin	Beginning
Red	Middle	Beginner/intermediate
Green	Hard	İntermediate
Blue	Very hard	İntermediate/advanced
Black	Special hard	İntermediate
Silver	Extremely hard	Advanced+
Gold	Maximum	Advanced+

Circular Strength Training: Circular strength training is a strength-building training exercise in which swimmers work with or without weight by gradually increasing resistance. The main purpose of coaches to have swimmers perform this strength training is shown as gaining strength, increasing muscle endurance and strength development (Crowley, 2020).

Plyometric Strength Training: Plyometric strength training plays an important role in the explosive strength development of swimmers. Swimmers have a tension and contraction system in which the return from eccentric contraction to isometric and concentric contractions changes rapidly. Plyometric strength training is important in the development of coordination and generated force (Rebutini, 2016).

Biokinetic Ergometer, Swim Bench Strength Training: These strength exercises are specially prepared for swimming. It arises from the imitation of the movement applied weighted or unweighted in any style in which swimmers swim by imitating it in a land environment.

Biokinetic swimming ergonometry works more towards the lower extremity than the upper extremity of the swimmer. The swimmer lies on a bench and puts his/her hands on the hand pedals and performs arm pulls as in freestyle swimming. The athlete should take care to make the correct arm pull in this movement.

Swim Bench applies certain movements in swimmer styles that apply strength training. The endurance of the swimmer who applies the style movements on a fixed ground, not in a wavy, frictional environment such as a pool, increases with this strength training (Crowley et al., 2017; Muniz-Pardos et al., 2019).

POOL TRAINING PROGRAMMING

Swimmers who practice swimming professionally are given a different training program than normal swimmers. A personalized training program should be created for swimmers at every level. The most basic feature of these training programs being personalized is due to knowing where the swimmer's deficiencies are, addressing the deficiencies, and developing the swimming styles that need to be developed. As an example, a 4-week pool training program is given below.

Table 2: 4-Week Pool Training Program (Kizilin, 2022).

1-4 WEEK	MORNİNG	EVENING
MONDAY	**Self-Training** 300m Free style (stretching) 2x150m Pullboy 02:10' 3x100 Foot kick 01:50' 2x150m Mixed style 02:15' 3x100m Pullboy 01:30' 3x300m Free style 04:00' 3x200m Free style 02:40' 3x150m Free style 02:00' 3x100m Free style 01:40'	**Aerobic Threshold** 300m Free style (stretching) 100-200-300m Foot kick 200m Pullboy 3x100m Mixed style 100m 2.30' 150m x10 3.20' 200m 4.10' 4x200m Pullboy
TUESDAY	**Fractional** 200m Free style (stretching) 4x200m mixed every 25-50m change style. 4x150m Pullboy/4x100m Foot kick 4x75m Pulboy /4x50m Foot kick (2x50m/ 1x100m) x2 100/50/100/50/100m 4x100m 400m 150/100/150m → from part to whole 2x200 1x400m	**Max Vo2** 400m Free style (stretching) 400m Foot kick 4x150m Pullboy 8x50m Mixed style 100m + 2x50 40sn 150m + 50m x3 1.15' 200m 1.55' 3x50m Total time 5'

WEDNESDAY	**Aerobic Threshold** 300m Free style (stretching) 100-200-300m Foot kick. 200m Pullboy 3x100m mixed style 50m 50sn 100m x 5 1.40' 150m 2.30' 200m 3.20' 4x200m Pullboy	**Race Step** 400m Free style (stretching) 400m Foot 4x150m Pullboy 8x50m Mixed 100m+2x50m 40sn150m + 50m x3 1.15' 200m 1.55' 3x50m 1.10' Total time 5'
THURSDAY	**Overload** 200m Free style (stretching) 2x100m Pullboy/Snorkel - Foot - Mixed 50/100/50m Foot - Mixed - Pullboy/ Snorkel 4x50m Mixed- Pullboy/Snorkel - Foot **750m completion** 5x150m 300m / 3x150m 450m / 2x150 600m / 1x150m	**Race Step** 400m Free style (stretching) 400m Foot kick 4x150m Pullboy 8x50m Mixed style 10x50m x3 55/50/45sn Total time 11'
FRIDAY	**Fartlek** 300m Free style (stretching) 100/150/200/250m Foot kick. Mixed Style 2x [4x25m/3x50m/2x75m/1x100m] 6 x 150m 3 fast 1 medium 8x(50m/100m/150m) 3 fast 1 medium Pullboy/Snorkel 4x75m/3x100m Pullboy/Snorkel 2x150m/1x300m	**Aerobic Threshold** 200m Free style (stretching) 150/100/50m Mixed / Pullboy/Foot 6x200m 3' 200m Pullboy 150m Foot kick 100m Pullboy 50m Foot kick
SATURDAY	**Track Training** 200 Free style (stretching) 2x150 Pullboy/ Snorkel 3x100 Foot style. 4x50m Mixed style **2x Super Sprint** 4x400m HFC-RLC-LRC - Crawler Mixed 4x300m HFC- RLC - LRC - Crawler Mixed 4x200m HFC- RLC - LRC - Crawler Mixed 4x100m HFC- RLC - LRC - Crawler Mixed	**OFF**

(HFC:Hand and foot Crawler, RLC: Right hand Left leg Crawler, LRC: Left hand Right leg Crawler)

LAND TRAINING PROGRAMMING

Land training plays an important role in the development of various motoric characteristics of swimmers such as flexibility, endurance, strength and speed. A personalized program is prepared for the needs of land training swimmers. It is shown as a type of training that helps the swimmer to be successful by providing positive development in the lower and upper extremities of the swimmers. As an example, an 8-week land training program is given below.

Table 3: 8-Week Land Training Program (Kizilin, 2022)

Training	First week	Second week	Third week	Fourth week	Fifth week	Sixth week	Seventh week	Eighth week
Back Squat	2x10	2x12	3x10	3x10	3x12	3x12	3x12	3x12
Walking Lunge (Front-Back)	2x10m	2x10m	3x10m	3x15m	3x15m	3x15m	3x20m	3x20m
Push Up	1x10	1x10	1x12	2x10	2x10	2x12	2x12	3x8
Pull Up	1x5	1x6	1x7	1x8	2x5	2x6	2x7	2x8
Tb Biceps Curl	1x15	1x15	2x12	2x12	3x10	3x10	3x10	3x10
Tb Push Down	1x15	1x15	2x12	2x12	3x10	3x10	3x10	3x10
Tb Lateral Raises	1x12	1x12	1x15	1x15	2x12	2x12	2x12	3x10
Tb Face Pull	1x12	1x12	1x15	1x15	2x12	2x12	2x12	3x10
Box Jumping	1x3	1x4	1x5	2x3	2x3	2x4	2x5	2x6
Front Plank	1x10sec	1x15sec	1x15sec	1x20sec	1x20sec	1x25sec	1x25sec	1x25sec
Leg Raises Plank Right	1x10sec	1x15sec	1x15sec	1x20sec	1x20sec	1x25sec	1x25sec	1x25sec
Leg Raises Plank Left	1x10sec	1x15sec	1x15sec	1x20sec	1x20sec	1x25sec	1x25sec	1x25sec
Side Plank	1x10sec	1x15sec	1x15sec	1x20sec	1x20sec	1x25sec	1x25sec	1x25sec
Dead Bug	1x10sec	1x15sec	1x15sec	1x20sec	1x20sec	1x25sec	1x25sec	1x25sec
Bird Dug	1x10sec	1x15sec	1x15sec	1x20sec	1x20sec	1x25sec	1x25sec	1x25sec
Mountain Climber	1x10sec	1x15sec	1x15sec	1x20sec	1x20sec	1x20sn	1x25sec	1x25sec

Burpee	1x3	1x4	1x5	2x3	2x3	2x4	2x5	2x6
Plank Knee Tap	1x6	1x8	2x6	2x6	2x8	2x8	1x10	1x12
Spider Mountain Climber	2x10m	2x10m	3x10m	3x15m	3x15m	3x15m	3x20m	3x20m
Rest Between Sets	45-60sec	45-60sec	45-60sec	45-60sec	45-60sec	45-60sec	45-60sec	45-60sec
Rest Between Sets	2min	2min	2min	2min	2min	2min	2min	2min
Violence	20%	20%	20%	30%	30%	30%	40%	40%

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