
EPTI Certificate in Instructing Suspension Training



LEARNER MANUAL



Certificate Structure

This Award is made up of two units:

Unit 1 – Planning a suspension training session

Unit 2 – Delivering a suspension training session

Overall aim of the qualification: to train learners to deliver safe and effective suspension training sessions.

CONTENTS

UNIT 1: PLANNING A SUSPENSION TRAINING SESSION

- Introduction to suspension training
- History of suspension training
- Benefits of suspension training
- Understanding the biomechanics of suspension training
- Incorporating suspension training into a training programme
- Programme design for suspension training

UNIT 2: DELIVERING A SUSPENSION TRAINING SESSION

- Instructing suspension training to a client



Use this manual, alongside the online theory session to:

- Learn & understand the theory behind suspension training
- Enable you to answer the assessment questions
- Prepare yourself for the practical training day
- Prepare yourself for the practical training assessment

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UNIT 1: PLANNING A SUSPENSION TRAINING SESSION

Aim: To provide you with an understanding of how to plan a safe and effective suspension training session.

Learning Outcomes

By the end of this unit you will::

- understand the history of suspension training
- understand the benefits of suspension training
- understand the biomechanics of suspended movement training
- understand the biomechanics of suspension training
- be able to design a suspension training programme



1. Overview & History of Suspension Training

1.1 What is Suspension Training?

The term 'suspension training' or, 'suspended movement training', refers to an approach to training that uses a system of ropes or straps called a 'suspension trainer', to allow the user to work against his, or her, own body weight.

Suspension training has been growing in popularity over recent years and has become a well-established form of training within the health and fitness industry. It's versatility and portability have meant that this form of training has become popularised within the gym environment, outdoor training and with sports teams. Combining bodyweight training with the instability of suspended straps offers participants a unique challenge to the body's movement systems and provides exercises that are fun, functional, and easily adapted

1.2 History of Suspension Training

Ancient Inca Civilisation

The earliest references to suspension training, using ropes for the purpose of improved physical conditioning, links back to the ancient Incan civilisation that dominated a vast area of land along the west coast of what is now South America, between the 15th and 16th centuries. To maintain communication throughout the empire, the Incas used what they called 'Chasqui' or speed messengers. Chasquis were young men with exceptional athletic ability to cover large distances across rocky terrain at high altitudes. The routes through the Andes were dotted with relay stations where one Chasqui would pass a message onto another Chasqui who would then run 6-9km to the next relay station before passing on the message like a baton in a relay race. This relay system combined with the physical fitness of the Chasqui enabled vital information to be carried as far as 246 miles in one day. The long distances that were covered and the mountainous terrain meant that the Chasquis had to enhance their physical conditioning through structured training. The terrain often meant the Chasqui were required to navigate steep slopes in tropical jungle conditions using ropes to assist them. It is thought that a simple form of suspended training, using ropes, was used to improve the Chasqui's ability to negotiate such terrain, and to enhance their chances of being part of this elite team of messengers.

Gymnastics

The gymnastic rings first appeared in the Olympic Games in 1924, and still form part of the men's gymnastic discipline today. However, the earliest reference to suspension training within gymnastics was in 1842 by a German gymnastics coach called Adolf Spiess. He developed a training tool called the 'ringeschwebel', with triangular handles similar to that of modern day suspension training systems. The handles were later developed into a circular ring shape, and with reference back to their Italian origins, were called Roman rings. Whilst the circular shape of gymnastic rings are ideal for the fully suspended movements of the gymnasts, the physicality of such exercises and movements

are beyond the capabilities of most gym users and clients. As such, the modern suspension systems have been developed to provide the fitness professional with a more versatile design suited towards partially suspended movement patterns, commonly with either the feet or the hands in contact with the floor.

Military

Randy Hetrick, a former Navy Seal and Stanford MBA graduate, developed the Total Resistance eXercise (TRX) equipment and the associated suspension training bodyweight exercises in the 1990s. During his years in the military, Hetrick was deployed to various locations where access to fitness training equipment was very limited. Driven by his desire to train regularly and maintain physical conditioning, Hetrick developed his first prototype of a suspension system by combining some parachute webbing and a metal carabiner.

In 2005, he started marketing his suspension system to the fitness industry, promoting its' versatility and portability to be able to perform 'fitness anywhere'. Since then, suspended movement training has popularised and several other manufacturers have devised suspension systems for use within the gym environment, at home and outside.

The modern day equipment used for suspension training is a lightweight, versatile, portable training tool. As well as being a training tool for the typical gym environment, it is also very well suited to outdoor PT, mobile PT and easily transported on trips or holidays.

Typical features of a modern day system include:

- foot strap or loop
- handle, sometimes interchangeable with other features
- adjustable straps
- secure buckle to maintain the length of the straps whilst in use
- anchoring carabiner
- anchoring straps to wrap around a frame, wall/ceiling attachment, or tree
- door anchor

2. Benefits of Suspension Training

2.1 Physiological Benefits of Suspension Training

Performing exercises whilst suspended from straps, or ropes, places the muscular system under physical stress from bodyweight and gravity.

Suspension training can be used to develop and improve:

- muscular strength
- muscular endurance
- coordination
- core function
- joint stabilisation
- core stabilisation
- body composition
- flexibility
- neuromuscular efficiency

One of the biggest advantages of suspension training is the increased level of muscular co-contraction. Due to the nature of the unstable environment and the suspended body position, not only are agonists working to create the desired movement, but there is also a large involvement of synergists, and particularly stabilisers, or fixating muscles. Combine this with the additional core stabilisation required, due to the body being suspended as opposed to resting on a machine or bench, then the level of co-contraction is similar to that of using unstable equipment such as BOSUs, wobble boards, Swiss balls, etc. *but with much greater versatility.*

While it is obvious that there are many physiological benefits from using suspension training equipment, it is clearly not suitable for every potential goal.

Suspension training provides an increased challenge to the client's training by challenging their stability. Some clients may require pre-conditioning before undertaking suspension training in order to perform the exercises safely and with good technique.

The instructor must also be aware that some individuals may actually lack the required skill level and movement patterns associated with the exercises. Weaker individuals may not have the core stability or joint integrity to use the system safely or effectively. Consequently it is possible for an individual to be placed in a biomechanically dangerous situation, where too much resistance has actually been created. The instructor must have an awareness of appropriate and effective exercises, which they should prescribe to the client.

Explosive power and strength can be difficult to achieve given the equipment relies on body weight, gravity and body angle to create a tension and overload in the target muscle. Dynamic movements do exist but will usually be the most progressed version of a specific exercise. These goals are still best achieved using olympic/standard weightlifting equipment and kettlebells. Participants of suspension training are limited to the amount of

weight that they are able to add when performing an exercise, and this is particularly relevant when considering the lower body compound (lift) exercises.

Finally, the instructor must be aware that there must always be a safe anchor point present on which to attach the suspension training equipment to, in order to be able to perform these exercises.

2.2 Non-Physiological Benefits of Suspension Training

Suspension training movements provide an effective, functional and adaptable training device for fitness professionals.

It's a very versatile piece of equipment meaning it can provide a full body workout for your clients. This can be very beneficial in busy periods within the gym, running group sessions solely on suspension training, and utilising it in mobile and outdoor personal training.

Its lightweight, compact design allows it to be packed away easily to take to different venues, outdoors in the park, or to your client's homes and can be used in place of traditional gym equipment at a relatively low financial cost. It therefore provides the trainer with a genuine platform to build a successful business without the need for lots of expensive equipment.

3. Incorporating Suspension Training into a Training Programme

3.1 The Biomechanics of Suspension Training

Before incorporating suspension training into a clients training programme, it's important to understand the ways in which biomechanical variables influence the difficulty of a suspension training exercise.

Angular Kinetics

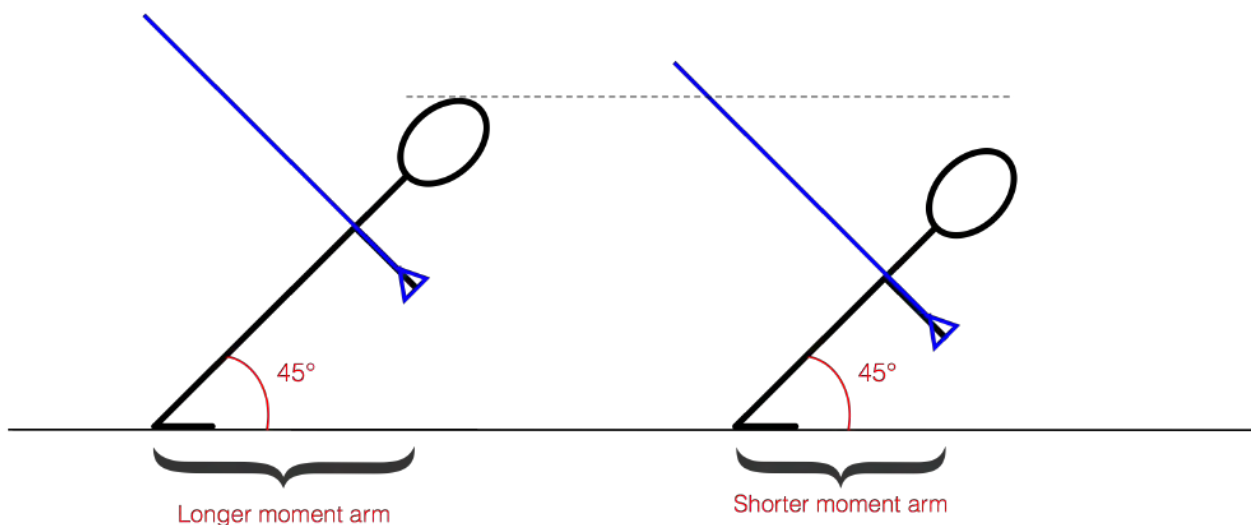
Angular kinetics is the name given to the study of angular motion. Suspension training falls into this form of biomechanics and although it is not necessary to have an in depth understanding of this to understand how to use techniques involved in suspension training, an understanding of the basic principles will help.

There are 4 key concepts that affect the load and effort when an individual is performing suspended movement training. An understanding of these 4 concepts will help you to learn how you can progress and regress exercises to make them harder, or easier, for yourselves or clients, and also help you to understand the differences in difficulty between individuals depending on their body shape and size.

1. Body height and mass
2. Leverage and mechanical advantage
3. Angle of loading
4. Pendulum effect

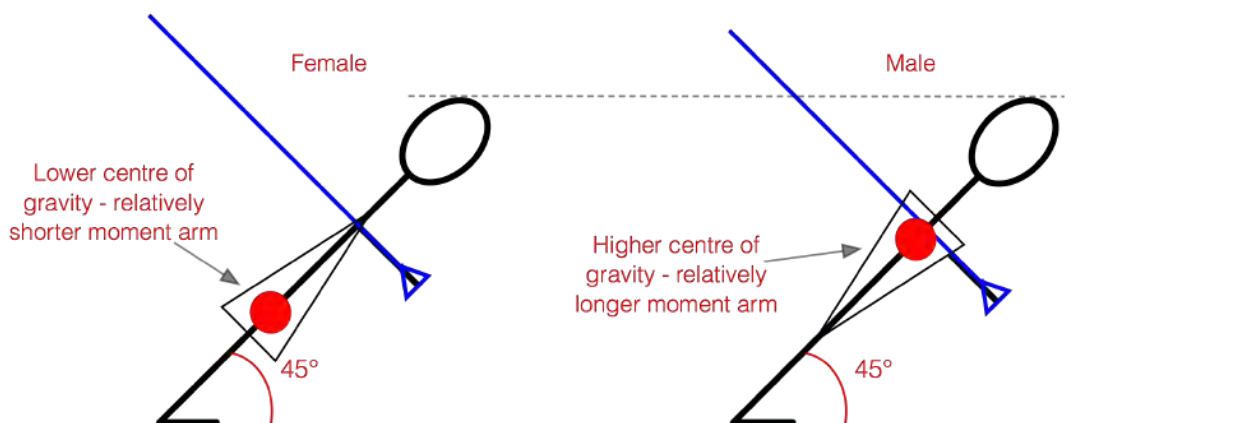
Body Height and Mass

Many exercises in suspended movement training involve hanging from the suspension system whilst the feet remain fixed on the floor, acting as a pivot point, or fulcrum. The height of the participant affects the distance between the pivot point (the feet), and the point of force (the handles). With taller individuals the distance between the feet and the strap handles (called the moment arm), is longer. The longer the moment arm, the greater the effort.



In simple terms, if two individuals both weighed 80kg but one was 5' 6" and one was 6' tall and they both performed an exercise with a body angle of 45° (and the straps are at the same anchor point and angle), the taller individual would need to put in a greater effort to overcome the resistance and perform the exercise, despite them being the same weight.

The differences in distribution of body mass between genders will also have an effect on the angular force and therefore the effort required to overcome it. Males tend to carry more of their total body and muscle mass in the upper portion of the body compared to females. This means that males carry a greater percentage of their body weight at the end furthest from the pivot point (the feet), causing greater angular forces and more effort required to overcome those forces. However, males' greater percentage of their total mass made up of muscle tissue may compensate for the greater angular forces.



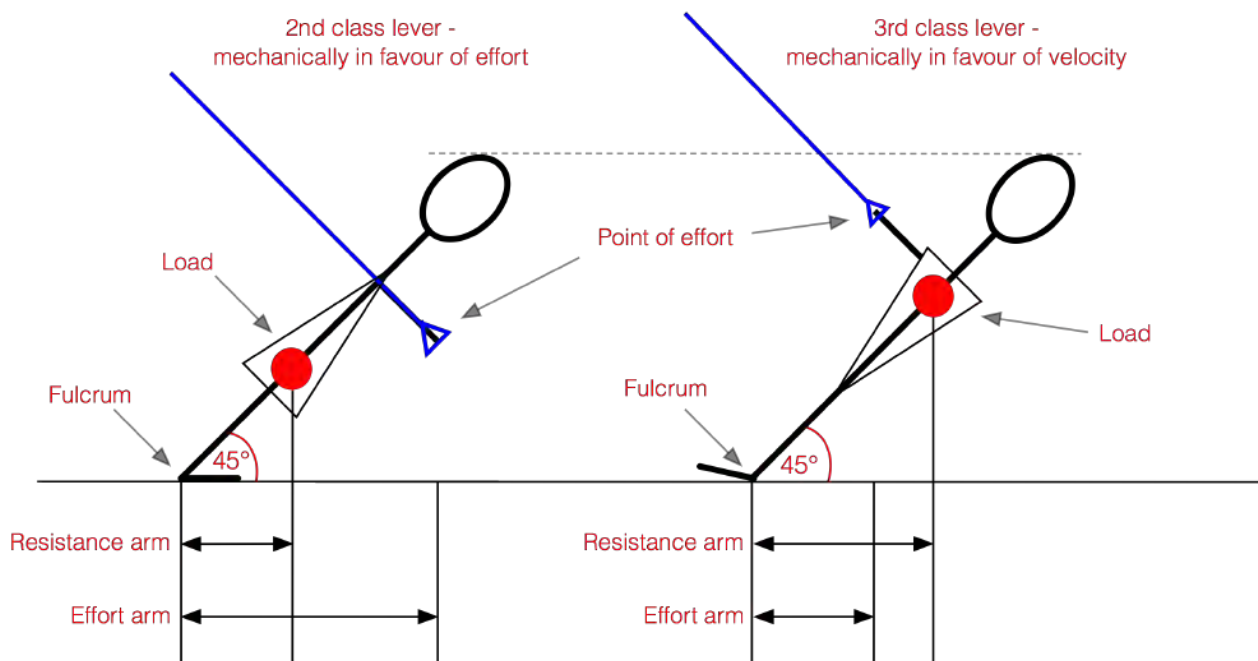
Leverage and Mechanical Advantage

There are three classes of lever, named simply by the position of the load (or resistance) in relation to the point of effort and the position of the pivot, or fulcrum. Basic knowledge of these three types of levers and their varying mechanical advantages will help in understanding the forces that a client will experience when performing different types of suspended movement training exercises.

Lever/Position	First Position	Second Position	Third Position
1st Class Lever	Load	Fulcrum	Point of Effort
2nd Class Lever	Fulcrum	Load	Point of Effort
3rd Class Lever	Fulcrum	Point of Effort	Load

First class levers are not common in suspension training however, both second and third class levers occur in many exercises. The following diagrams show basic pushing and pulling exercises to illustrate both a second and third class lever and how the leverage differs between the two. The difference in leverage also changes the mechanical advantage, either in favour of effort or velocity.

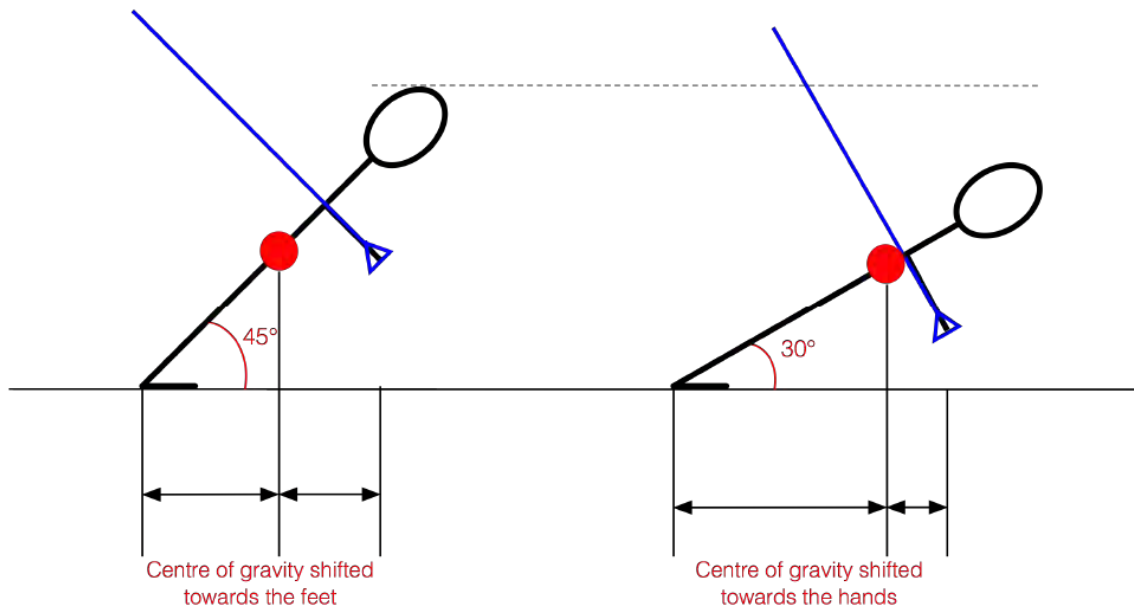
When the effort arm is longer than the resistance arm (second class lever), it provides a mechanical advantage in favour of the effort, making the load experienced by the client feel much lighter. When the effort arm is shorter than the resistance arm (third class lever), it provides a mechanical advantage in favour of velocity, but in doing so makes the load experienced by the client feel much heavier.



Angle of Loading

Suspension training exercises can be varied by the body angle at which they are performed. The angle at which they are performed will affect the load experienced and therefore the intensity of the exercise. This is usually to do with the position of the centre of gravity between the two points of contact (the floor and the handles of the suspension training system).

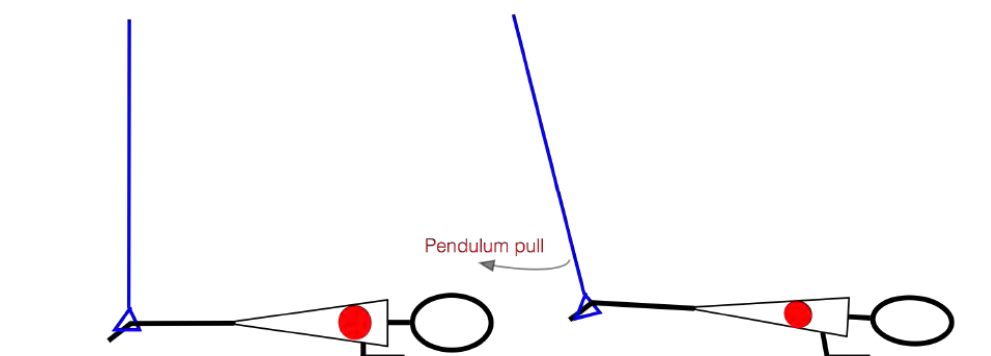
If the feet are acting as the pivot point, when the angle between the body and the floor is relatively large, then the centre of gravity is closer to the feet causing a large percentage of body mass to be relatively far from the working muscles, making the exercise easier. If the angle between the body and the floor is relatively small, then the centre of gravity is closer to the point of effort (handles of the suspension trainer) causing a large percentage of body mass to be close to the working muscles, making the exercise harder.



Pendulum Effect

For floor-based suspension training movements, moving your feet away from the anchor point will increase the resistance and heighten the challenge. Moving your feet towards the anchor point or behind the anchor point will decrease resistance and make movements easier to execute. This is due to the pendulum effect, which is a gravitational pull that attempts to pull the weight at the end of the straps back into a perpendicular position.

We can manipulate the intensity of exercises such as suspended press ups, the suspended plank and laying hamstring curls deliberately by using the pendulum effect. By moving the body farther away from the anchor point, a greater resistance will be applied to the exerciser.



In addition to the biomechanics outlined above, another key element to the difficulty (regression/progression) of suspension training exercises, is the 'base of support'. The base of support being the part of the client that is in contact with the floor, commonly the feet, or sometimes the hands. Specifically, it is the width of the base of support that will influence the difficulty of the exercise in terms of stabilisation. A wide base of support will increase how stable the client is, thus making the exercise easier. A narrow base of support will decrease how stable the client is, thus making the exercise harder.

3.2 Health & Safety Considerations of Suspension Training

As with all forms of participation in exercise, initial screening is important prior to participating in suspended movement training. A completed PAR-Q will highlight any contraindications to exercise and/or indications for GP referral. Further sessions should, as always, commence with a brief verbal screening.

Additional health and safety recommendations specific to suspension training include:

- check the suitability of the object or frame that the suspension system will be anchored to. It must be able to withstand the users FULL bodyweight and any additional pulling or tugging forces created during use.
- check the suspension system for wear and tear. This includes the straps, adjustment buckle, any carabiners, and the handles.
- ensure there is sufficient room surrounding the area and that the floor is flat, stable, and non-slip. Ideally, there should be a space at least 2.5m long x 2m wide.
- suspension training places a lot of demand upon stabilising musculature; ensure progressions are only made when good practice has enabled clients to perform given exercises competently, without loss of technique.
- upon completion of the session, the equipment should be checked for any damage and then stored in an appropriate way and the training area left tidy.

3.3 Identify Appropriate Suspension Training Exercises & their Purpose

Suspension Training Exercises

The exercises within this section are intended to provide a foundation on which to build your library of exercises. Each exercise within the section details the primary muscles used and the teaching points that must be followed to achieve sound technique. Each exercise table includes common problems and solutions and provides appropriate regressions suitable for those who require the exercise to be made easier or simpler, and progressions for those who need the exercise to be made more challenging.

All exercises are grouped into a category based on the movement pattern and muscles involved. The 6 categories within this section are as follows:

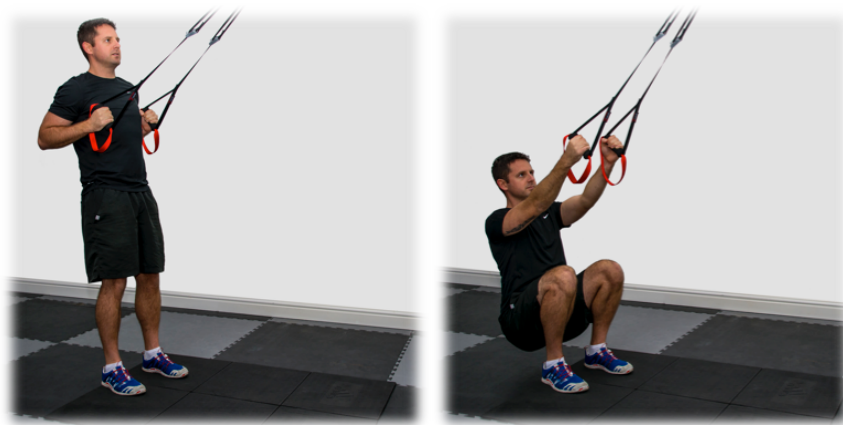
- lift (compound lower body exercise)
- push (compound upper body 'pushing' or 'pressing' exercise)
- pull (compound upper body 'pulling' or 'rowing' exercise)
- combined movement (exercise involving a combination of 2 of the above)
- isolation (exercises involving movement at one joint)
- core (exercises that primarily target the core musculature)

N.B. Progressions & regressions without accompanying images, will be covered during practical training, as well as the main exercises.

LIFT Exercise library

Squat

Target muscles:	Quadriceps, Gluteus Maximus, Hamstrings, Calves
Straps:	Medium - Long (Dependent on available room behind client). Standard handles.
Set Up:	Straps taut with handles close to armpits. Feet shoulder width.
Teaching Points:	<ul style="list-style-type: none">• Sit back, chest lifted, bum below knees• Neutral spinal alignment• Lengthen arms to full ROM• Weight in the heels• Drive through the heels to return to the start position



Regression	Progression
<ul style="list-style-type: none">• take feet wider for a more stable base• shallower depth (½ squat)	<ul style="list-style-type: none">• add in a jump to perform a 'squat jump' or 'jump squat'• progress to the single leg or 'pistol' squat

Single Leg Squat

Target muscles:	Quadriceps, Gluteus Maximus, Hamstrings, Calves
Straps:	Medium - Long (Dependent on available room behind client). Standard handles.
Set Up:	Straps taut with handles close to armpits. One foot slightly centred, other foot elevated in front.
Teaching Points:	<ul style="list-style-type: none">• Sit back, chest lifted, bum below knee• Neutral spinal alignment• Lengthen arms to full ROM• Weight in the heel• Drive through the heel to return to the start position



Regression	Progression
<ul style="list-style-type: none"> squat (bilateral) shallower depth (½ single leg squat) 	<ul style="list-style-type: none"> lighter grip on the straps add in a jump to perform a 'single leg squat jump' or 'single leg jump squat'

Curtsy Squat

Target muscles:	Quadriceps, Gluteus Maximus, Hamstrings, Calves
Straps:	Medium - Long (Dependent on available room behind client). Standard handles.
Set Up:	Straps taut with handles close to armpits. Feet shoulder width apart.
Teaching Points:	<ul style="list-style-type: none"> Slightly elevate one foot, sit back with chest lifted Take elevated foot laterally under opposite thigh Neutral spinal alignment Lengthen arms to full ROM Weight in the heel Drive through the heel to return to the start position



Regression	Progression
<ul style="list-style-type: none"> squat (bilateral) single leg squat 	<ul style="list-style-type: none"> Ice skaters (dynamic curtsy squat)

Suspended Split Squat

Target muscles:	Quadriceps, Gluteus Maximus, Hamstrings, Calves
Straps:	Approximately knee height. Foot loop used.
Set Up:	One foot grounded forward of anchor point. Other foot placed in foot loop. If right foot is grounded, take the right arm forward.
Teaching Points:	<ul style="list-style-type: none"> • Sit back, chest lifted • Lower the suspended knee back and down, to approximately ankle height • Alternate arms during movement • Neutral spinal alignment • Weight in the heel • Drive through the foot to return to the start position



Regression	Progression
<ul style="list-style-type: none"> • hold onto a vertical pole for support • perform without rear foot suspended, facing the anchor point holding the handles for support 	<ul style="list-style-type: none"> • add a jump at the top of the movement

Reverse Lunge

Target muscles:	Quadriceps, Gluteus Maximus, Hamstrings, Calves
Straps:	Medium - Long (Dependent on available room behind client). Standard handles.
Set Up:	Straps taut with handles close to armpits. Feet shoulder width
Teaching Points:	<ul style="list-style-type: none"> • Step one foot back, dropping back knee to ankle height • Approximately 90° bend at both knees • Neutral spinal alignment • Lengthen arms to full ROM • Weight in the front heel • Drive through the front foot to return to the start position



Regression

- split squat holding handles for support

Progression

- add a knee raise when returning to start position

Side Lunge

Target muscles: Quadriceps, Gluteus Maximus, Hamstrings, Calves

Straps: Medium - Long (Dependent on available room behind client). Standard handles.

Set Up: Straps taut with handles close to armpits. Feet shoulder width.

- Teaching Points:
- Take a wide lateral step and sit back into the landing leg
 - Chest up, hip-knee-ankle alignment, trailing leg straight
 - Neutral spinal alignment
 - Allow arms to lengthen, as needed
 - Weight in the heel
 - Drive through the lunging foot to return to the start position



Regression

- static side lunge
- alternate sides

Progression

- dynamic (explosive/ power) side lunges

Single Leg Deadlift

Target muscles:	Gluteus Maximus, Hamstrings
Straps:	Approximately knee height. Foot loop used.
Set Up:	One foot grounded forward of anchor point. Other foot placed in foot loop. If right foot is grounded, take the right arm forward.
Teaching Points:	<ul style="list-style-type: none"> • Tip from the hips • Keep hands below shoulders • Neutral spinal alignment • Slight bend in knee • Allow suspended foot to move back from the start point • Engage glutes, driving the hips forward to return to the start position



Regression	Progression
<ul style="list-style-type: none"> • shallower depth • performed without rear foot suspended, facing anchor point, holding handles for support 	<ul style="list-style-type: none"> • single leg touchdowns - reach opposing hand across to grounded foot

Sprinter Start

Target muscles:	Quadriceps, Gluteus Maximus, Hamstrings, Calves
Straps:	Short-Medium height. Standard handles.
Set Up:	Face away from the anchor point. Straps taut under arms with handles close to armpits. Split stance with 45° angle in the body.
Teaching Points:	<ul style="list-style-type: none"> • Drive through front foot • Draw back leg through into a knee raise • Neutral spinal alignment • Finish up on toes • Keep straps taut • Return to start position

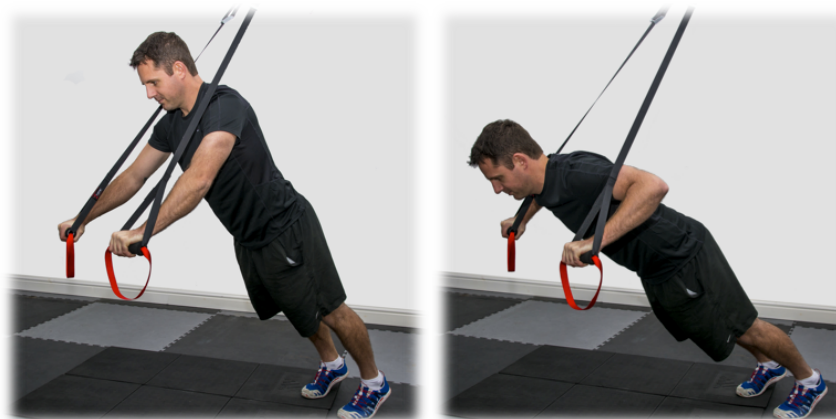


Regression	Progression
<ul style="list-style-type: none"> draw back leg through to feet together position 	<ul style="list-style-type: none"> pause at 'knee up' position add a 'hop forward, hop back' action onto front foot

PUSH Exercise Library

Chest Press

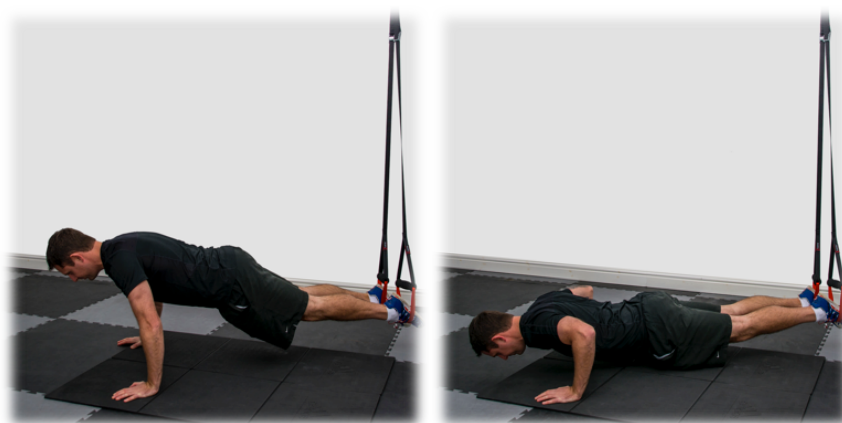
Target muscles:	Pectoralis Major, Anterior Deltoid, Triceps Brachii
Straps:	Medium-Long height. Standard handles.
Set Up:	Face away from the anchor point. Feet shoulder width. Lean forward with handles in front of shoulders.
Teaching Points:	<ul style="list-style-type: none"> Neutral spinal and body alignment Lower the body whilst moving the elbows backwards, in line with mid chest Keep wrists directly in line with the elbows Push against handles to return to start position Keep straps just off the shoulders to avoid rubbing



Regression	Progression
<ul style="list-style-type: none"> wide or offset stance more upright body position 	<ul style="list-style-type: none"> narrow stance or lift one foot Adopt steeper body angle

Suspended Press Up

Target muscles:	Pectoralis Major, Anterior Deltoid, Triceps Brachii
Straps:	Long length. Foot loops used.
Set Up:	Standard press up position. Feet in loops, directly under anchor point. Hands outside shoulder width, in line with mid chest.
Teaching Points:	<ul style="list-style-type: none"> • Neutral spinal and body alignment • Lower the body until the chest is close to the floor • Forearms stay vertical, elbows above wrists • Push against floor to return to start position



Regression	Progression
<ul style="list-style-type: none"> • one foot on the floor 	<ul style="list-style-type: none"> • add pendulum effect by moving away from the anchor point

PULL Exercise Library

Narrow Row

Target muscles:	Latissimus Dorsi, Posterior Deltoid, Biceps Brachii, Mid Trapezius, Rhomboids
Straps:	Medium-Long length. Standard handles.
Set Up:	Face anchor point. Feet shoulder width. Lean back with arms at full length, palms facing inwards.
Teaching Points:	<ul style="list-style-type: none"> • Neutral spinal and body alignment • Pull through the handles bringing the chest closer to the anchor point • Keep elbows close to the body • Keep forearms in line with the straps • Squeeze shoulder blades together



Regression

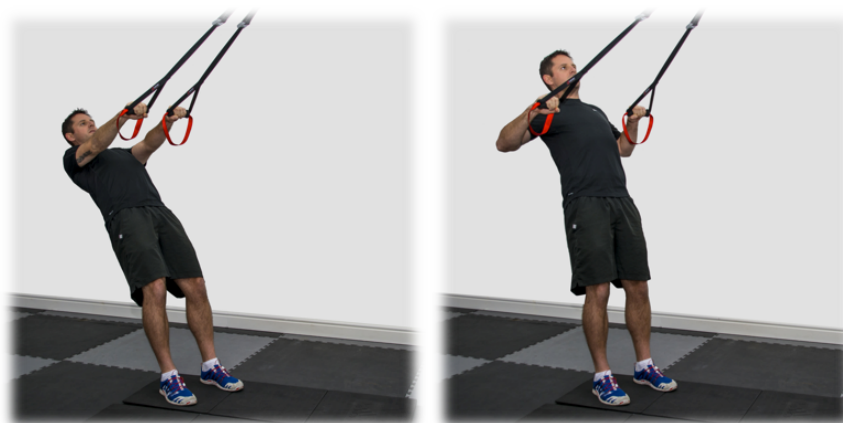
- wide or offset stance
- more upright body position

Progression

- narrow stance or lift one foot
- Adopt steeper body angle

Wide Row

Target muscles:	Posterior Deltoid, Biceps Brachii, Mid Trapezius, Rhomboids
Straps:	Medium-Long length. Standard handles.
Set Up:	Face anchor point. Feet shoulder width. Lean back with arms at full length, palms facing downwards (Pronated grip).
Teaching Points:	<ul style="list-style-type: none"> • Neutral spinal and body alignment • Pull through the handles bringing the chest closer to the anchor point • Keep elbows away from the body, in line with the mid chest • Keep forearms in line with the straps • Squeeze shoulder blades together



Regression

- wide or offset stance
- more upright body position

Progression

- narrow stance or lift one foot
- Adopt steeper body angle

Single Arm Row with Rotation

Target muscles:	Latissimus Dorsi, Posterior Deltoid, Biceps Brachii, Mid Trapezius, Rhomboids, Obliques
Straps:	Medium-Long length. Standard handles.
Set Up:	Face anchor point. Feet shoulder width. Lean back with one arm holding the handle at full length. Open up the body to reach behind with the spare hand. Look towards the spare hand.
Teaching Points:	<ul style="list-style-type: none">• Neutral spinal and body alignment• Pull through the handle bringing the chest closer to the anchor point• Rotate through the trunk to reach the spare arm towards the anchor point• Keep looking towards the spare hand• Keep pulling elbow close to the body• Keep pulling forearm in line with the straps• Squeeze shoulder blades together• Reverse the movement under control



Regression

- widen stance
- more upright body position
- single arm row (no rotation)

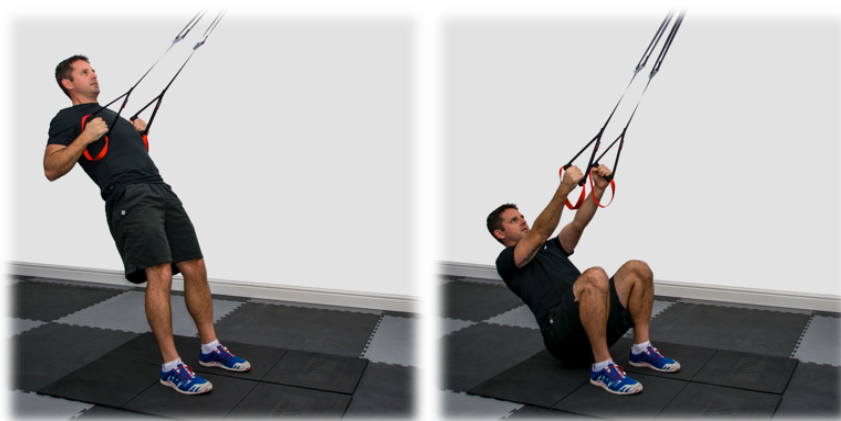
Progression

- narrow stance or lift one foot
- Adopt steeper body angle

COMBINED MOVEMENTS Exercise Library

Squat to Row

Target muscles:	Quadriceps, Gluteus Maximus, Hamstrings, Latissimus Dorsi, Posterior Deltoid, Biceps Brachii, Mid Trapezius, Rhomboids
Straps:	Medium length. Standard handles.
Set Up:	Face anchor point. Feet shoulder width. Lean back with straps taut and handles close to armpits. Keep elbows close to the body and palms facing inwards.
Teaching Points:	<ul style="list-style-type: none">• Neutral spinal and body alignment• Sit back into a squat, lengthening the arms as required• Bum close to floor at the bottom of the movement• Drive through feet and simultaneously pull through the handles to return to the start position• Squeeze between shoulder blades



Regression

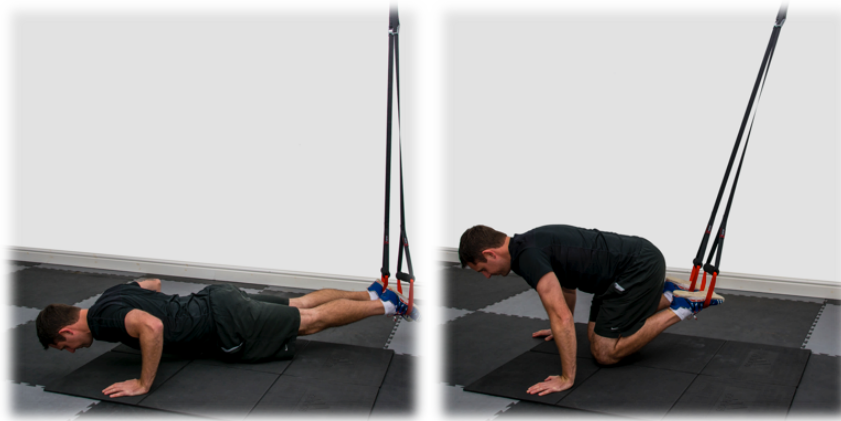
- wide or offset stance
- more upright body position

Progression

- narrow stance or lift one foot
- Adopt steeper body angle

Atomic Press Up

Target muscles:	Pectoralis Major, Anterior Deltoid, Triceps Brachii, Hip Flexors, Core
Straps:	Long length. Foot loops used.
Set Up:	Standard press up position. Feet in loops, directly under anchor point. Hands outside shoulder width, in line with mid chest. Lower chest to floor to start.
Teaching Points:	<ul style="list-style-type: none">• Neutral spinal and body alignment• Push against the floor to lift the body upwards, simultaneously drawing the knees into the chest• Keep the hips low, approximately shoulder height• Lengthen the legs and simultaneously lower the body to return to the start position



Regression

Progression

- suspended press up

- add pendulum effect by moving away from the anchor point
- Atomic Oblique Press Up (See Oblique crunch/ jackknife with rotation in core section)

Assisted Muscle Up

Target muscles: Latissimus Dorsi, Posterior Deltoid, Biceps Brachii, Mid Trapezius, Rhomboids, Triceps Brachii

Straps: Medium length. Standard handles.

Set Up: Face anchor point. Feet shoulder width. Lean back with arms at full length.

- Teaching Points:
- Neutral spinal and body alignment
 - Pull through the handles as for a narrow row, keeping the elbows close to the body
 - At the top of the row, extend through the elbows, continuing to bring the body more upright, finishing with arms by the sides of the body
 - Ensure the whole exercise is performed in a powerful, explosive movement, using the acceleration to assist the final elbow extension
 - Reverse the movement with as much control as possible



Regression

Progression

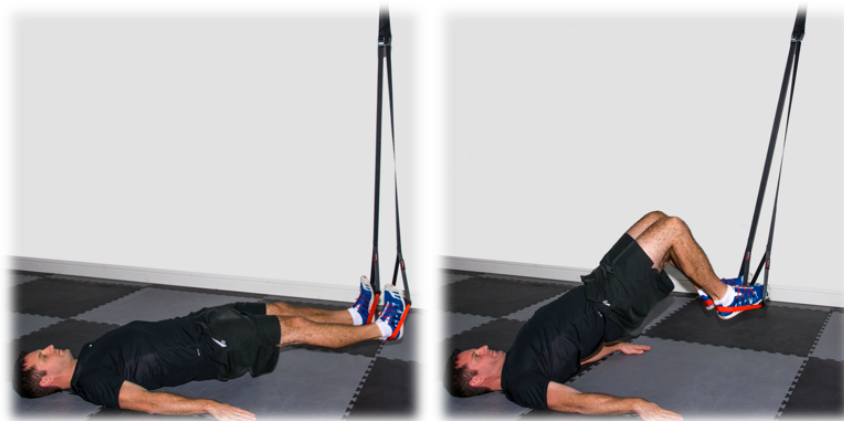
- wide or offset stance
- more upright body position

- narrow stance or lift one foot
- Adopt steeper body angle

ISOLATION Exercise Library

Hamstring Curls

Target muscles:	Hamstrings
Straps:	Long length. Foot loops used.
Set Up:	Supine body position. Place heels in the foot straps, directly under the anchor point. Raise hips to achieve full body alignment.
Teaching Points:	<ul style="list-style-type: none">• Draw heels towards the bum, whilst simultaneously lifting the hips to maintain alignment between the shoulders and knees• Knees bend / flex to $\leq 90^\circ$• Slowly lengthen the legs and lower the hips to start position• Press heels down into straps throughout the movement



Regression	Progression
<ul style="list-style-type: none">• perform heel drag keeping hips low	<ul style="list-style-type: none">• cross arms across chest• utilise pendulum effect

Chest Flye

Target muscles:	Pectoralis Major, Anterior Deltoid
Straps:	Medium - Long length. Standard handles.
Set Up:	Face away from the anchor point. Feet shoulder width. Lean into handles with hands shoulder width, palms facing in
Teaching Points:	<ul style="list-style-type: none">• Maintain neutral spinal and body alignment• Maintain slight bend in the elbows• Lower the body towards the floor by opening up the chest, moving the hands wide through a semi-circle / arc• Handles finish in line with the body• Draw handles back across the front of the body in an arc to the start position



Regression

- wide or offset stance
- more upright body position

Progression

- narrow stance or lift one foot
- Adopt steeper body angle

Straight Arm Pulldown (Swimmers Pull)

Target muscles: Latissimus Dorsi, Posterior Deltoid

Straps: Medium length. Standard handles.

Set Up: Face the anchor point. Feet shoulder width. Lean back with arms at full length. Palms facing down.

Teaching Points:

- Maintain neutral spinal and body alignment
- Maintain slight bend in the elbows
- Extend at the shoulder joints, lifting the body towards the anchor point until the arms pass parallel with the body
- Slowly reverse the shoulder movement to return to the start position



Regression

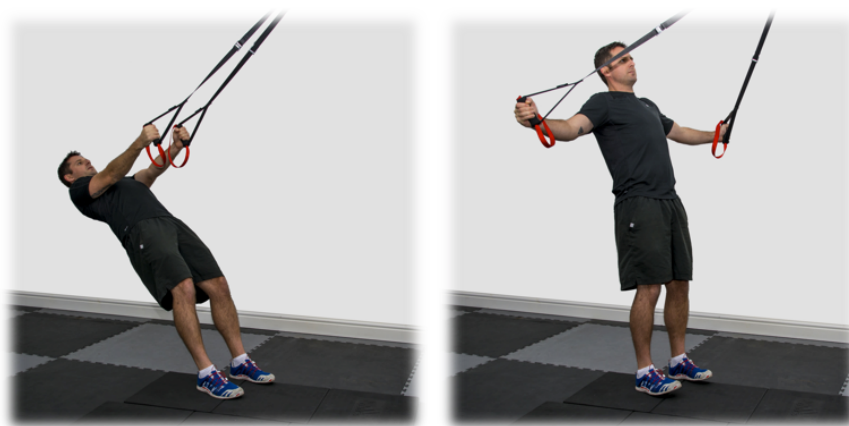
- wide or offset stance
- more upright body position

Progression

- narrow stance or lift one foot
- Adopt steeper body angle

Reverse Flye (T)

Target muscles:	Posterior Deltoid, Mid Trapezius, Rhomboids
Straps:	Medium length. Standard handles.
Set Up:	Face the anchor point. Feet shoulder width. Lean back with arms at full length. Palms facing inwards.
Teaching Points:	<ul style="list-style-type: none">• Maintain neutral spinal and body alignment• Maintain slight bend in the elbows• Move shoulders through horizontal extension, opening up the chest, lifting the body towards the anchor point. Create a “t” shape with the body• Squeeze between shoulder blades• Slowly reverse the shoulder movement to return to the start position



Regression	Progression
<ul style="list-style-type: none">• wide or offset stance• more upright body position	<ul style="list-style-type: none">• narrow stance or lift one foot• Adopt steeper body angle

Reverse Flye (Y)

Target muscles:	Posterior Deltoid, Mid Trapezius, Rhomboids
Straps:	Medium length. Standard handles.
Set Up:	Face the anchor point. Feet shoulder width. Lean back with arms at full length. Palms facing inwards.
Teaching Points:	<ul style="list-style-type: none">• Maintain neutral spinal and body alignment• Maintain slight bend in the elbows• Move shoulders through a diagonal arc, lifting the body towards the anchor point. Create a “Y” shape with the body• Squeeze between shoulder blades• Slowly reverse the shoulder movement to return to the start position



Regression

- wide or offset stance
- more upright body position

Progression

- narrow stance or lift one foot
- Adopt steeper body angle

Tricep Extension

Target muscles: Triceps Brachii

Straps: Medium - long length. Standard handles.

Set Up: Face away from the anchor point. Feet shoulder width. Lean into the handles with arms at full length. Palms facing downwards.

- Teaching Points:
- Maintain neutral spinal and body alignment
 - Keep upper arms locked in start position, with elbows pointing away from the anchor point
 - Lower the body by bending at the elbow, bringing the handles closer to the ears
 - Push through the handles, extending at the elbows to return to the start position



Regression

- wide or offset stance
- more upright body position

Progression

- narrow stance or lift one foot
- Adopt steeper body angle

Bicep Curl

Target muscles:	Biceps Brachii
Straps:	Medium length. Standard handles.
Set Up:	Face the anchor point. Feet shoulder width. Lean back with arms at full length. Palms facing upwards.
Teaching Points:	<ul style="list-style-type: none">• Maintain neutral spinal and body alignment• Bend the elbows keeping the elbows pointing towards the anchor point, raising the body• Slowly reverse the movement, extending through the elbows, back to the start position



Regression	Progression
<ul style="list-style-type: none">• wide or offset stance• more upright body position	<ul style="list-style-type: none">• narrow stance or lift one foot• Adopt steeper body angle• single arm bicep curl, facing sideways

CORE Exercise Library

Crunch (Jackknife)

Target muscles:	Core - Inner & Outer Unit
Straps:	Long length. Foot loops used.
Set Up:	Place the feet in the foot loops, with the body in the prone position. Feet under the anchor point, hands on the floor under shoulders, elbows unlocked
Teaching Points:	<ul style="list-style-type: none">• Brace the core• Draw the knees towards the chest, keeping the upper body parallel to the floor• Slowly extend through the hips and knees to return to the start position



Regression

- mountain climbers - see below

Progression

- utilise pendulum effect by starting with feet in front of the anchor point

Oblique Crunch (Jackknife with Rotation)

Target muscles:	Core - Inner & Outer Unit
Straps:	Long length. Foot loops used.
Set Up:	Place the feet in the foot loops, with the body in the prone position. Feet under the anchor point, hands on the floor under shoulders, elbows unlocked
Teaching Points:	<ul style="list-style-type: none"> • Brace the core • Draw the knees towards one elbow, keeping the upper body parallel to the floor • Slowly extend through the hips and knees to return to the start position • Repeat towards the opposite elbow • Keep the movement slow and controlled



Regression

- crunch / jackknife

Progression

- utilise pendulum effect by starting with feet in front of the anchor point

Suspended Plank

Target muscles:	Core - Inner & Outer Unit
Straps:	Long length. Foot loops used.
Set Up:	Place the feet in the foot loops, with the body in the prone position. Feet under the anchor point, forearms on the floor with elbows under the shoulders
Teaching Points:	<ul style="list-style-type: none"> • Brace the core • Lift hips off floor to keep neutral body alignment • Maintain neutral spinal alignment throughout • Keep a comfortable breathing pattern • Hold position for desired length of time • Release slowly to the floor between sets



Regression	Progression
<ul style="list-style-type: none"> • normal plank 	<ul style="list-style-type: none"> • utilise pendulum effect by starting with feet in front of the anchor point • perform on the hands to raise the centre of gravity

Suspended Side Plank

Target muscles:	Core - Inner & Outer Unit
Straps:	Long length. Foot loops used.
Set Up:	Place feet in the foot loops, under the anchor point. Face sideways with the top foot slightly in front of the bottom foot. Place forearm on the floor perpendicular to the body, elbow under the shoulder
Teaching Points:	<ul style="list-style-type: none"> • Brace the core • Lift hips off floor, and push hips forward, to keep neutral body alignment • Maintain neutral spinal alignment throughout • Keep a comfortable breathing pattern • Hold position for desired length of time • Release slowly to the floor between sets, and repeat on the other side



Regression	Progression
<ul style="list-style-type: none"> bottom foot placed on the floor instead of the foot loop 	<ul style="list-style-type: none"> utilise pendulum effect by starting with feet away from the anchor point raise hand to ceiling perform on the hand rather than forearm

Mountain Climbers

Target muscles:	Core - Inner & Outer Unit
Straps:	Long length. Foot loops used.
Set Up:	Place the feet in the foot loops, with the body in the prone position. Feet under the anchor point, forearms on the floor with elbows under the shoulders
Teaching Points:	<ul style="list-style-type: none"> Brace the core Draw one knee towards the chest, keeping the upper body parallel to the floor Extend through the hip and knee to return the leg to the start position whilst simultaneously drawing the opposite leg towards the chest. Alternate legs for the desired number of repetitions



Regression	Progression
<ul style="list-style-type: none"> perform a complete repetition with one leg before switching to the other, rather than simultaneous movement 	<ul style="list-style-type: none"> utilise pendulum effect by starting with feet in front of the anchor point

Standing Roll/Reach Out

Target muscles:	Core - Inner & Outer Unit
Straps:	Medium length. Standard handles.
Set Up:	Face away from the anchor point. Feet shoulder width apart. Lean slightly into the handles with hands shoulder width, positioned in line with the lower ribs
Teaching Points:	<ul style="list-style-type: none">• Keep the elbows soft throughout, but do not bend at the elbows during the exercise• Brace the core• Flex the shoulders, lowering the body towards the floor until the arms are in line with the ears• Maintain neutral spine and body alignment• Push through the handles, extending at the shoulder to return to the start position



Regression

- widen stance
- decrease ROM
- more upright body position

Progression

- narrow stance
- Adopt steeper body angle

4. Designing a Suspension Training Programme:

Overview

Safe and effective programme design needs to take into consideration many factors but most importantly fitness professionals need to look at the person they are writing the programme for. We need to consider the client's lifestyle, current fitness level and training age, exercise likes & dislikes, time availability and training objectives, as well as the environment and the equipment available.

We also need a series of logically progressive training phases which we can use to progress or regress the clients as needed.

The '*resistance training progression pyramid*' illustrates a phased model of training, starting with endurance and building up to power that can be targeted by suspension training.



The resistance training pyramid shows a phased model of training, starting with endurance and building up to power. As can be seen in the diagram above, having a large base of endurance work will provide a larger base for the other phases. Guidelines for the acute variables for muscular endurance, hypertrophy and muscular strength can be seen in the table below.

The time that muscles are under tension during particular exercises can also be used to determine the length of sets in order to conform to various training goals.

As mentioned before, suspension training does have some limitations when it comes to achieving results in all training phases. The mass that is being used as a resistance, bodyweight, is fixed and may only be varied by increasing or decreasing the leverage effect or manipulating the mechanical advantage that an exercise may have upon the load. The limitations are particularly evident when it comes to 'lift' exercises (compound leg exercises). Limitations in upper body exercises may be evident in some clients targeting the hypertrophy or strength phases due to the inability to add load greater than full bodyweight, with maximum leverage and minimum mechanical advantage.

Every type of suspension training session must consist of an appropriate:

- Warm up
- Conditioning phase
- Cool down.

4.1 Warm Up and Cool Down Activities

Warm Up

An appropriate warm up period is an important part of any exercise programme. The warm up is completed prior to the main exercise component and used to prepare the participant for the workout to follow. It should consist of a pulse raiser and dynamic stretches, both of which can be general or specific to the training session.

You should be aware of any client postural issues such as tight muscles (e.g. hip flexors, pecs) and weak muscles (glutes, mid/lower trapezius) so that these can be addressed with dynamic stretches.

Warm up activities, and dynamic stretches could be performed with or without the use of the suspension trainer.

To perform Suspension Training exercises effectively, warm up activities need to:

- increase blood flow to working muscles
- mobilise joints
- dynamically stretch tight/short muscles
- activate weak/lengthened muscles
- activate core muscles

Cool Down

Cooling down after a workout is as important as warming up. After physical activity, your heart is still beating faster than normal, your body temperature is higher and your blood vessels are dilated. This means if you stop too fast, you could suffer from blood pooling. A pulse lowering activity allows for venous return to occur; thus preventing blood pooling, and bringing the body closer to its resting state by the end of the workout.

It's good practice to perform static stretches at the end of the cool down to maintain or develop flexibility, and to reduce tension in the muscles.

4.2 Exercise Selection & Order - The Main Conditioning Component

Considerations need to be made regarding the acute variables shown in the table below, but also regarding the exercises selected and exercise order. Exercise selection is particularly relevant to the clients training experience, generally and specifically to suspension training, as well as their goals, time available, posture, and training frequency.

Training Outcome/Variable	Strength	Hypertrophy	Endurance
Intensity	High	Moderate	Low
Load (% 1RM)	>85%	67-85%	<67%
Reps	1 - 5	6 - 12	>12
Sets	2 - 6	3 - 6	2 - 3
Rest between sets	3 - 5 mins	1 - 2 mins	30 - 60s
Frequency	1 - 2/week	1 - 2/week	2 - 3/week

Select the appropriate exercise complexity to fit your client's needs, choosing the most relevant form of each exercise to challenge appropriately i.e. progressions and regressions.

Basic programme considerations include the following:

- compound vs. isolation
- complexity
- balance of muscles used

Exercise order should follow the guidelines for all types of resistance training:

- complex exercises before simpler exercises
- larger muscle groups before smaller muscle groups
- compound before isolation
- equal rest between muscle groups
- core exercises last

Unsuitable exercise selection and order can lead to premature fatigue, poor posture, goals not being reached, and potentially injury.

More complex exercises, and those requiring large muscle mass should be performed early in the session when clients have the most energy to overcome the most amount of load, and do the exercise as efficiently as possible, with good technique. If clients did the more challenging exercises at the end when they are more tired, they're more likely to do them with poor form, increasing risk of injury, and they also won't be able to lift as much weight.

Sets & Reps Guidelines

The numbers of sets and reps given to a client, should be relative to the outcome that you are trying to achieve with them. For example, if their goals are related to hypertrophy then they should be performing reps between 6-12 with 3-6 sets. However, you may have reasonable rationale to not conform with these guidelines, for example, your client may be new to suspension training and therefore a higher rep range would be appropriate for the client to learn the techniques involved through higher repetition of the movement pattern.

Example programme card (Full body muscular endurance):

Warm Up			
Exercise	Speed/RPM/Level	RPE	Duration
Treadmill	5 - 10 kph	Progress 1-5	5 mins
Dynamic Stretches (8-10reps): Chest Opener, Arm Pull Down, Shoulder Rotations, Squat with Woodchop, Side Lunges, Hip Openers, Single Leg Deadlift			
Main Component			
Exercise	Sets/Reps	Rest	Adaptations
Squat	2 x 12-15	30-60s	Add jump
Chest Press	2 x 12-15	30-60s	Body angle change
Narrow Row	2 x 12-15	30-60s	Body angle change
Side Lunge	2 x 12-15	30-60s	
Suspended Plank	2 x 15s	30-60s	
Cool Down			
Exercise	Speed/RPM/Level	RPE	Duration
Upright Bike	Level 6-1, decrease RPM	Regress to 2-3	3-5 mins
Static Stretches: Total body maintenance or developmental stretching			

Advanced Programme Design

As a fitness professional, you have many options when creating more advanced training programmes, including:

- increasing exercise complexity
- progressing the training phase
- using advanced training methods (supersets, tri-sets etc.)
- manipulating rest times
- designing split programmes
- combining suspended movement training with other training mediums (kettlebells etc.)
- performing the exercises in a circuits format
- programming for postural correction

As well as the above, you have the ability to create variation to your clients training by using the suspension training systems in other environments such as outdoors. Being small, light, and versatile makes suspended movement training an ideal tool for outdoor 1:1 sessions and group sessions.

Example programme card (Advanced client main component only):

Main Session			
Exercise	Sets/ Reps	Rest	Notes
Single leg deadlift	3 x 8-10	90 secs	Rear foot suspended
Curtsy squat	3 x 8-10	90 secs	
Muscle Up	3 x 8-10	90 secs	
Chest press to flye	3 x 8-10	90 secs	Perform a complex set
Wide row to reverse flye	3 x 8-10	90 secs	Perform a complex set
Standing rollout	3 x 8-10	90 secs	
Jackknife with twist	3 x 8-10	90 secs	

4.3 Exercise Progressions, Regressions, and Adaptations

It may be necessary to adapt an exercise for a client, or look to progress a client overtime. The way in which an exercise is progressed or regressed is dependent upon the specific exercise, but here is a brief guide to common adaptations...

- **Modify your body angle** - Most upper body standing exercises can be made harder (more load) by adopting a steeper body angle by moving the feet towards the anchor point. To make the same exercise easier (less load), the client would need to adopt a more upright body angle by moving the feet away from the anchor point.
- **Widen or narrow your base of support** - Most upper body standing exercises can be made less stable (therefore harder) by decreasing the base of support, but narrowing the stance or taking one foot off the floor. To make the same exercise more stable (easier), the client would need to increase the base of support by widening the stance.
- **Offset your feet** - For older, younger, or less confident clients, upper body standing exercises can be modified by adopting an offset stance (rather than parallel).
- **Change your start position** - Most floor exercises can be made harder by positioning your body further away from the anchor point before starting the exercise (pendulum effect).
- **Raise or lower your centre of gravity** - Plank exercises can be made easier by supporting your body with your forearms. Supporting your body with your hands, arms extended will increase the challenge.

UNIT 2: DELIVERING A SUSPENSION TRAINING SESSION

Aim: To provide you with the skills required to instruct a safe and effective suspension training session

Learning Outcomes

By the end of this unit you will:

- Be able to effectively instruct suspension training exercises to a client



1. Instructing Suspension Training Exercises

Session Preparation

Before engaging in suspension training, clients should have a good foundation of basic exercise technique. They should also show previous ability and experience in adhering to basic training principles.

Suspension training places the body in a state of destabilisation under load. This creates a challenging position where body or kinaesthetic awareness must be developed to a sufficient level to enable the core and other joint stabilisers to manage the centre of gravity over its base of support. It's therefore important that the client has the appropriate strength and coordination to maintain increased levels of spinal stabilisation in order to ensure a correct body position and alignment to safeguard their joint integrity throughout the exercise.

It is important that you set up the suspension training system correctly before using it. This will ensure that the exercises can be performed correctly, safely, and maintain good condition of the equipment.

To set up the suspension training equipment, attach it to a secure point that will support your body weight, e.g. on weight rack, A-frame, chin up bar; or outside on railings, posts or tree branches. This anchor point should be between 7-9ft off the ground. The method of attaching the suspension trainer to the anchor point will vary depending on the brand of suspension training system, and instructors should follow the manufacturers guidelines to ensure a secure fixing is made.

The set up includes checking that there is no damage to the straps, carabiners, handles, and adjustment buckles, ensuring the straps are anchored correctly, the carabiners are secure and that the system can take the user's full body weight, plus additional force.

The bottom of the foot cradles should be approx 3-4" off of the ground when the suspension trainer is fully lengthened.

1.1 Introducing Suspension Training Exercises to the Client

If the client is partaking in suspension training for the first time, they will need to be briefed on some key aspects of their use, before you move into any practical demonstrations and client participation.

Some key points you could briefly cover include:

- The importance of a strong anchor point
- The handle vs the foot loop
- The method for adjusting the length of the suspension trainer
- The benefits - why are you introducing suspension training into their sessions
- Health & safety considerations including associated risks

1.2 Aims & Objectives

Before we start with the training aspect of the session, it's important to begin the session by introducing the aims and objectives, outlining the content of the workout and linking the purpose of each exercise and indeed the session as a whole to their own training goals.

When introducing a new suspension training exercise to your clients, ensure you clearly explain the aims and objectives of that specific exercise, including the key technique points needed to perform the exercise effectively.

Example exercise introduction:

"We're going to have a go at Suspended Press Ups. This exercise is great for the muscles of the chest, front of the shoulders, and back of the arms, and due to the suspended position of the exercise it will also be great for the core muscles. The aim of this exercise is to perform a press up, whilst the feet are in the foot loops, suspended off the floor. Let me show you how to get into position and perform the exercise, and then we can go through the technique in more detail."

1.3 Demonstrations

As with all exercises that are new to a client, a technically correct demonstration is an important factor in teaching them safe and effective technique. Visual learners will find it particularly important. During challenging exercises, dynamic exercises, and those that involve you facing the ground (e.g. suspended press up), it will be beneficial to provide a silent demo, with clear and concise teaching points before and after the demonstration.

1.4 Teaching Points and Communication Skills

When giving teaching points to a client, they should be concise and succinct allowing the recipient to quickly and easily understand what is being instructed. Overuse of teaching points can be confusing and cause 'information overload'! Give them sparingly and allow the recipient to adapt and execute what you are instructing and follow up with praise, before contemplating giving more. Teaching points that focus on safety should precede those that focus on effectiveness.

It is far more motivational for clients to hear teaching points in the positive form rather than the negative form. For example, 'keep a slight bend in your elbow' is more appropriate than 'don't lock out your elbow', despite being the same message.

Another way to think about it is to tell them what they should be doing, not what they shouldn't be doing.

Excellent instruction and communication is vital in the delivery of suspension training to your clients. Good instructional skills will enable the fitness professional to maximise both the safety and effectiveness of a training session. Good communication skills inform the client in a manner in which they quickly and easily understand, through the use of both

verbal and visual cues. These verbal and visual cues include a large vocabulary of verbal instructions, use of imagery, hand signals, facial expressions, voice intonation and demonstrations of excellent exercise technique.

1.5 Positioning and Moving to Observe Client Technique

Move around your client and observe their performance of the exercise from different angles, to ensure that they have correct posture and technique. Provide them with praise for the aspects that they are doing well and provide constructive, sandwiched, feedback to help them improve performance where applicable. When communicating with them, ensure you are facing them and preferably in front of them, so they can easily hear your instructions.

It's important to coach the client to keep a good posture throughout all of their exercises. Encourage them to maintain a neutral spine by engaging their core in order to minimise the stress on the spine and its structures (discs, ligaments etc).

1.6 Identify Alternatives and Adaptations

If appropriate, identify alternative exercises or adapt the exercise to ensure the client is able to perform the exercise with good form if their technique is compromised; or conversely, if they are insufficiently challenged because the exercise is too easy for them.

1.7 Providing the client with feedback & evaluating your performance

It's important to provide your client with feedback on their performance in rest periods, when they have finished a specific exercise, and when the session is complete. In rest periods, the focus could be on providing them with specific feedback that they can focus on in the next set. This could also require another demo to reinforce this. When the client has finished all sets of a particular exercise, you should praise them on their performance and, if appropriate, give them some focus for their future practice. Gaining feedback from the client will also aid your ability to programme the exercise in future sessions. As with all sessions, final feedback to the client addressing any general findings/comments can be done at the end of the session.

Each session should end with an evaluation by the instructor and participants. Encourage feedback from your clients. Did they enjoy it, could the session be improved? Did it meet their needs?

If teaching a class, try to get feedback from a number of the group; be mindful of an individual who may be particularly vocal (and often critical) as they may not speak for the majority of the class. Add to this feedback your own evaluation of the session. Often the reality of a session is different from what was planned. Was the session safe and effective? Were there any difficulties? Could the session be improved?

Self-reflection is a key skill for an instructor to develop in order to grow and progress as a

professional.

All evaluations should be recorded in order to help you progress and develop and create an action plan to improve your teaching technique.

Student Check List:

Do you...

- Understand the history of suspension training?
- Understand the benefits of suspension training?
- Understand how to incorporate suspension training exercises into a training programme?
- Understand how to design a suspension training programme?

Have you...

- Completed the suspension training theory assessment?
- Prepared for your practical training day by...
 - Learning the names of the suspension training exercises in this manual?
 - Learning the purpose of the suspension training exercises in this manual?
 - Learning the key teaching points associated with each exercise?
 - Practiced performing the suspension training exercises in this manual?



— E U R O P E A N —
PERSONAL TRAINING
— I N S T I T U T E —