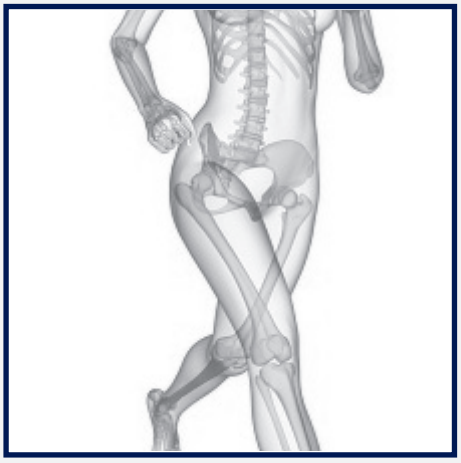
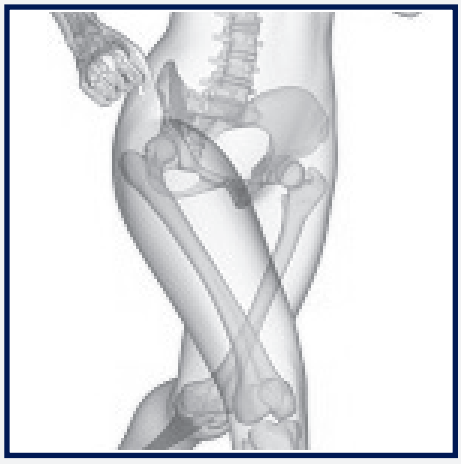
YOUR RUN3D REPORT

Accurate biomechanical data you can trust



Everything you need to know about your running!



Client Name: anna Boniface

Date of Birth: 27/04/1991

Clinician Name: admin

Assessment Date: 16/02/2017

INTRODUCING YOUR RUN3D REPORT

We are delighted to present the results of your Run3D analysis. During your assessment, we tested a wide-range of parameters that have been associated with musculoskeletal injuries and running performance. In this report, your individual results have been compared to our database of uninjured controls to highlight injury risk-factors and biomechanical parameters that are deterimental to your performance.

This is a very detailed and highly-specialised report. We have summarised some of the most important parameters at the beginning and your clinician will use the more detailed information to gain a thorough insight into your musculoskeletal function. These results will be used to provide you with evidence-based injury advice and specific performance recommendations.

HOW WILL THESE RESULTS HELP ME?

Your clinician will use the results presented in this report to help you:

Improve Running Performance

We have analysed your running technique to accurately identify gait patterns associated with reduced efficiency and decreased performance. Your clinician will recommend ways to modify your running style in order to address these issues, thereby increasing running efficiency and improving performance.

Treat an Existing Injury

Abnormal gait patterns are usually the root-cause of overuse injuries. Your Run3D assessment has objectively measured a wide-range of injury risk-factors so that your clinician can understand the root-cause of your injury and recommend an evidence-based rehabiliation programme.

Prevent Future Injuries

Your Run3D assessment has accurately measured patterns in your gait that might predispose you to injury. Your clinician will use this information to create a specific pre-habilitation programme to directly address your known injury risk-factors. This is espescially important if you are looking to increase the volume and/or intensity of your training.

UNDERSTANDING YOUR RUN3D REPORT

There is a lot of information presented in this report and your clinician will focus your attention to the results that are most important for your specific injury and performance targets. This report gives unparalleled insight into your musculoskeletal function and the data will be used to recommend evidence-based treatment and optimise your performance.

Your results are presented in the following ways:

Your Results Summary

A summary of important injury risk-factors and performance indicators to provide a useful overview of your biomechanics.

Your results are compared to our database of uninjured controls and presented on a colour-coded scale to give a clear illustration of whether you are above, below or within our control range.

Key Parameter Graphs

A very detailed analysis of your biomechanics, looking at a much wider-range of proven injury risk-factors and performance indicators than presented in your Results Summary. This information provides your clinician with further insight into your results and any important findings will be discussed with you during your review.

Your biomechanics are compared to our database of uninjured controls and represented graphically to illustrate whether you are above, below or within our control range. Your numerical results are also presented in a table for further analysis.

Gait Analysis Graphs

The exact three-dimensional movement of each joint throughout the gait cycle. This is highly specialised data and provides your clinician with results that have comparable accuracy and precision to gait analyses conducted at research laboratories and elite sports institutions.

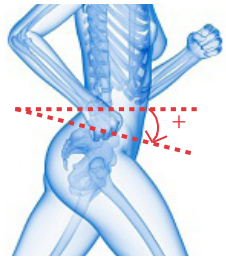
The gait analysis graphs are plotted with the joint angle (in degrees) on the vertical axis and the gait cycle (in % gait) on the horizontal axis. The range of our uninjured controls are shown in the shaded band.

YOUR GAIT ANALYSIS SUMMARY

Trial Conditions: Running at 6:30 min/mile with neutral footwear on 16/02/2017 (initial)

Cadence	Step Width	Vertical Excursion	Over-stride
183	83	98	109
Mean: 190	Mean: 74mm	Mean: 81mm	Mean: 147mm

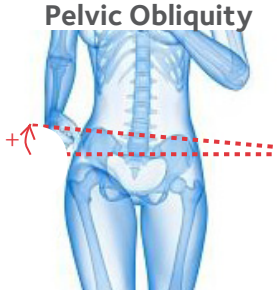
Anterior Pelvic Tilt



The amount the front of the pelvis tips forwards. Above if too much forwards tilt.

Your anterior pelvic tilt is within normal range for both legs.

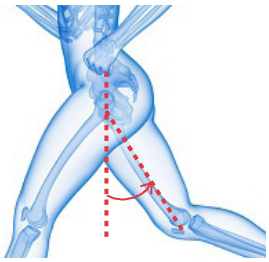
Pelvic Obliquity



The side-to-side position of the pelvis. High when stance-side rises and other side drops.

Your pelvic obliquity is below normal range for your left leg and within normal range for your right leg. We recommend that you improve the mobility of your hips, pelvis and lumbar spine.

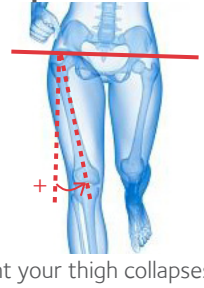
Hip Extension at Toe-Off



The amount your thigh extends behind the pelvis at the time of toe-off.

Your hip extension at toe-off is within normal range for both legs.

Hip Adduction



The amount your thigh collapses inwards towards the midline of the body.

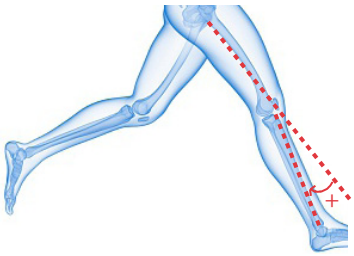
Your hip adduction is within normal range for your left leg and above normal range for your right leg. We recommend that you improve the strength of your hip and pelvic stabilisers, and consider gait retraining.

Hip Internal Rotation

The amount your thigh twists inwards in relation to the pelvis.

Your hip internal rotation is within normal range for your left leg and above normal range for your right leg. We recommend that you strengthen your hip abductors and pelvic stabilisers.

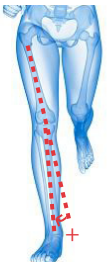
Knee Flexion at Foot-Strike



The amount your knee bends when your foot strikes the ground.

Your knee flexion at foot-strike is below normal range for both legs. We recommend that you increase your cadence and bring your foot closer to your centre of mass at foot-strike.

Knee Abduction



The amount your knee collapses inwards towards the midline of your body.

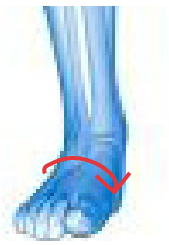
Your knee abduction is below normal range for both legs. We recommend that you improve the mobility of lateral hip and leg structures, such as the hip rotators, ITB and TFL.

Dorsiflexion at Foot-Strike

The amount your ankle bends upwards or downwards as your foot strikes the ground

Your dorsiflexion at foot-strike is below normal range for both legs. We recommend that you consider gait retraining techniques and stretch your calves.

Maximum Eversion



The maximum amount that your ankle everts (pronates) as your foot is on the ground.

Your maximum eversion is within normal range for your left leg and above normal range for your right leg. We recommend that you improve the control of your ankle stabilisers and have the movement patterns of your hips and pelvis assessed.

YOUR CLINICAL EXAM SUMMARY

Trial Conditions: MSK Advanced on 06/03/2017

Hip Abductor Strength

Your hip abductor strength is within normal range for both legs.

Hamstring Strength

Your hamstring strength is within normal range for your left leg and below normal range for your right leg. We recommend that you increase the strength of your hamstrings to help with stabilisation of the lower limbs.

Ankle Inverter Strength

Your ankle inverter strength is within normal range for both legs.

Hip External Rotation RoM

Your hip external rotation range of motion is above normal range for both legs.

Hip Internal Rotation RoM

Your hip internal rotation range of motion is within normal range for both legs.

Hip Flexor Flexibility

Your hip flexor flexibility is within normal range for both legs.

Ankle Dorsiflexion RoM (Knee Bent)

Your ankle dorsiflexion range of motion (knee bent) is within normal range for your left leg and above normal range for your right leg.

Ankle Dorsiflexion RoM (Knee Extended)

Your ankle dorsiflexion range of motion (knee extended) is within normal range for both legs.

MTPJ RoM

Your MTPJ range of motion is within normal range for your left leg and above normal range for your right leg.

Single Legged Squat

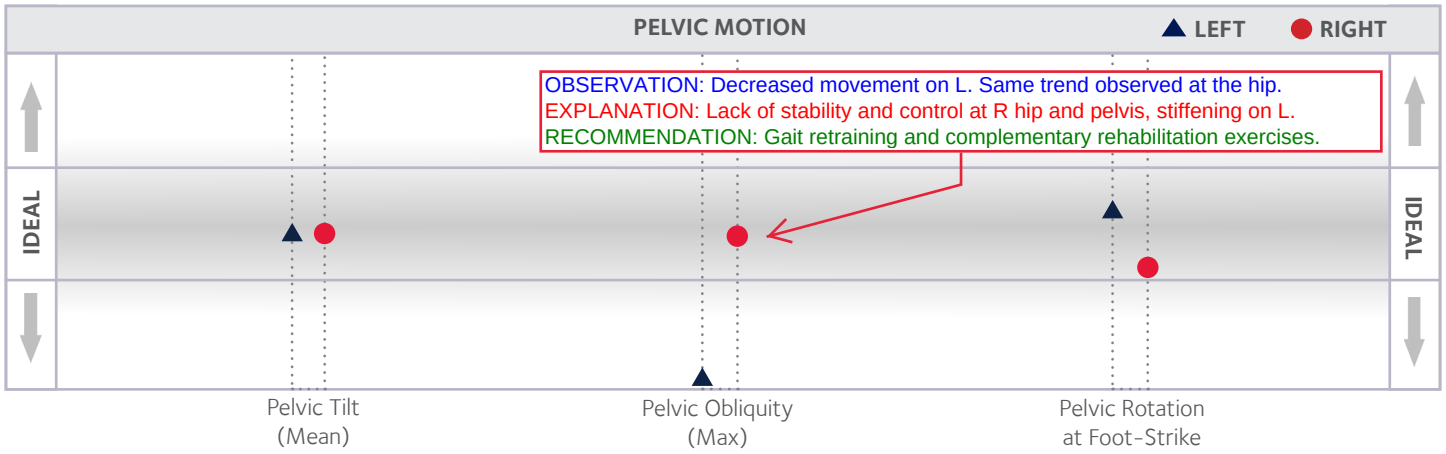
On your right we observed: No problems.

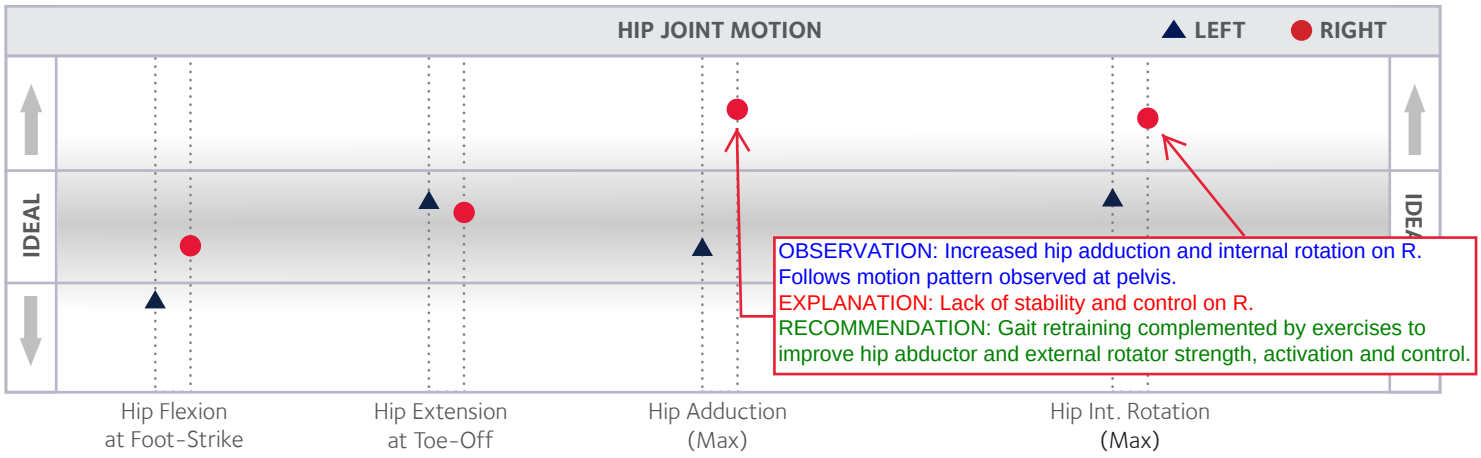
On your left we observed: Medial knee dive.

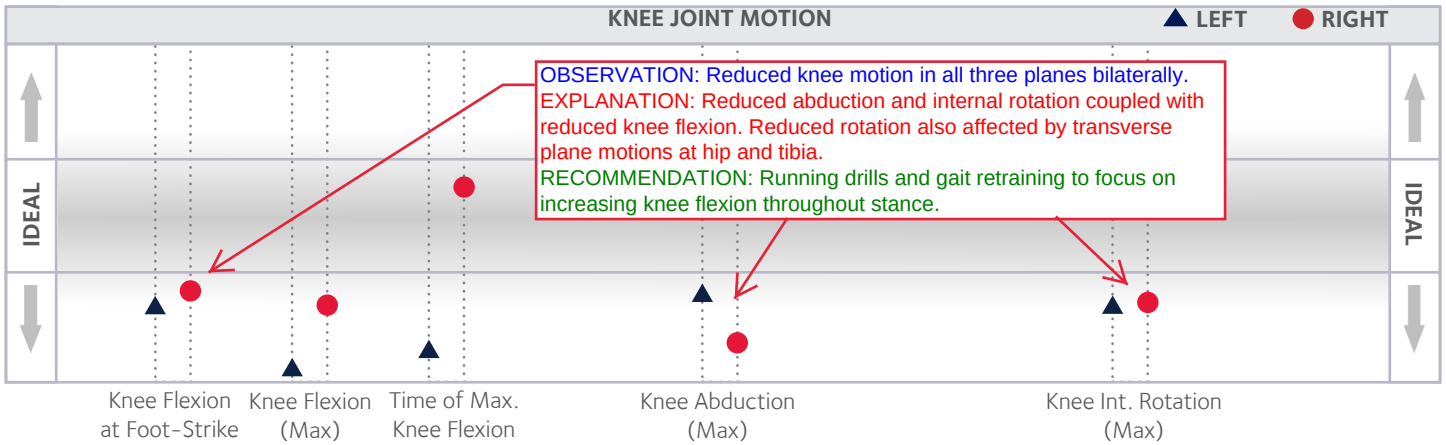
We recommend that you improve the control of your single leg squat by strengthening your hip/pelvic stabilisers and practicing with support.

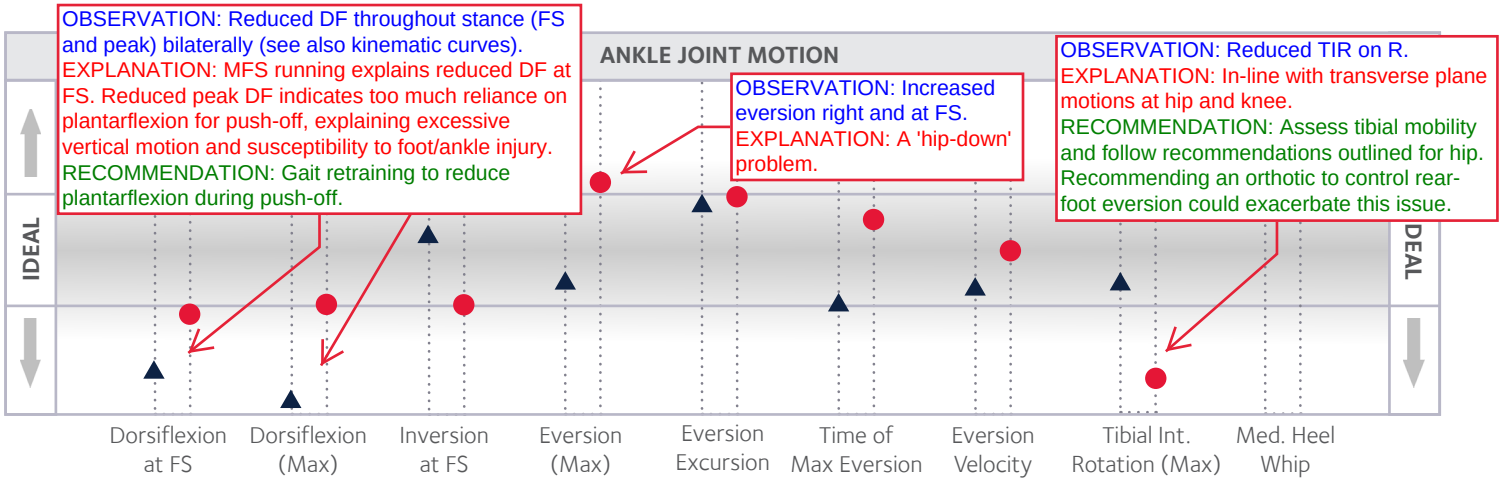
GAIT ANALYSIS PARAMETERS

Trial Conditions: Running at 6:30 min/mile with neutral footwear on 16/02/2017 (initial)



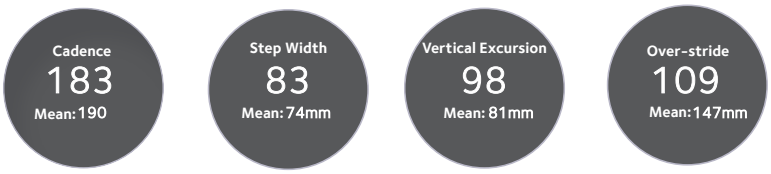


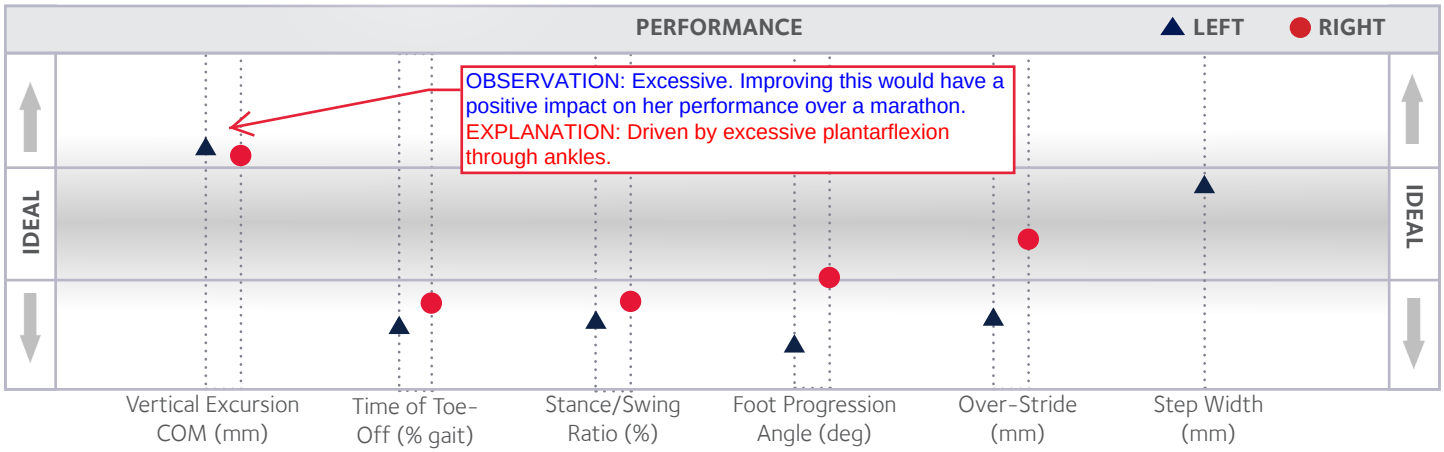




GAIT ANALYSIS PARAMETERS cont'd

Trial Conditions: Running at 6:30 min/mile with neutral footwear on 16/02/2017 (initial)





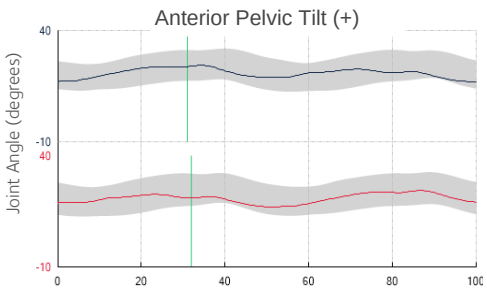
PARAMETER Units in Degrees Unless Specified Otherwise	YOUR RESULT (Mean (STD)) L | R		CONTROLS (Mean) L | R	
Pelvic Tilt (mean stance)	20.8 (0.7)	20.7 (0.8)	21.8	21.9
Pelvic Obliquity (max stance)	-2.3 (0.7)	5.9 (0.9)	3.3	6.3
Pelvic Rotation at Foot-Strike	-3.2 (1.3)	-7.7 (1.5)	-4.3	-3.9
Hip Flexion at Foot-Strike	38.1 (1.1)	47.6 (1.1)	50.2	51.0
Hip Extension at Toe-Off	-5.5 (1.0)	-3.4 (1.6)	-1.2	-1.0
Hip Adduction (max stance)	0.4 (0.8)	10.0 (0.9)	2.3	2.6
Hip Internal Rotation (max stance)	18.3 (0.9)	28.0 (1.4)	15.6	19.2
Knee Flexion at Foot-Strike	5.1 (1.6)	7.4 (2.0)	12.7	13.8
Knee Flexion (max stance)	28.3 (1.3)	34.3 (1.2)	46.7	44.4
Time of Max Knee Flexion (% gait)	13.4 (0.9)	16.3 (0.9)	16.1	15.7
Knee Abduction (max)	-3.7 (0.4)	-6.5 (0.7)	1.3	2.4
Knee Internal Rotation (max)	-14.1 (0.8)	-23.6 (1.4)	-5.4	-12.5
Dorsiflexion at Foot-Strike	-19.7 (1.4)	-11.3 (1.5)	2.8	0.9
Dorsiflexion (max stance)	12.3 (0.8)	16.8 (0.6)	22.2	19.7
Dorsiflexion at Toe-Off				
Inversion at Foot-Strike	11.2 (1.6)	6.3 (1.5)	9.3	10.8
Eversion (max stance)	5.8 (1.1)	12.0 (1.1)	7.9	7.9
Time of max eversion (% gait)	10.8 (0.8)	12.8 (0.6)	13.8	11.9
Eversion Excursion	23.5 (1.2)	23.4 (1.2)	19.0	19.6
Eversion Velocity (degrees/second)	323.2 (44.0)	428.0 (43.9)	407.2	429.4
Tibial Internal Rotation (max)	-0.4 (0.4)	-3.8 (1.1)	1.6	3.9
Medial Heel-Whip				
Static Vertical Off-Set Angle				
Vertical excursion centre of mass (mm)	98.1 (4.8)	98.1 (4.7)	80.9	84.1
Time of toe-off (% gait)	30.9 (0.6)	31.9 (0.7)	35.7	35.1
Stance/Swing Ratio (%)	44.7 (1.3)	46.8 (1.6)	55.8	54.3
Foot Progression Angle	-1.3 (1.1)	7.4 (1.5)	21.1	17.3
Over-Stride (mm)	109.3 (13.6)	140.5 (12.4)	147.1	146.4
Step-Width (mm)	82.51 (15.4)		73.52	
Cadence (Steps/Minute)	182.77		190.31	

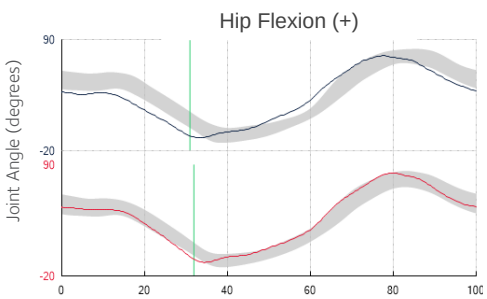
GAIT ANALYSIS GRAPHS

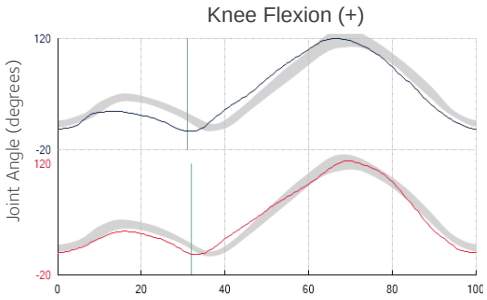
Trial Conditions: Running at 6:30 min/mile with neutral footwear on 16/02/2017 (initial)

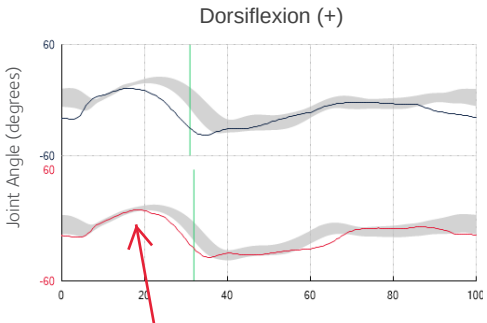
Left Leg Right Leg Uninjured Controls

SAGITTAL

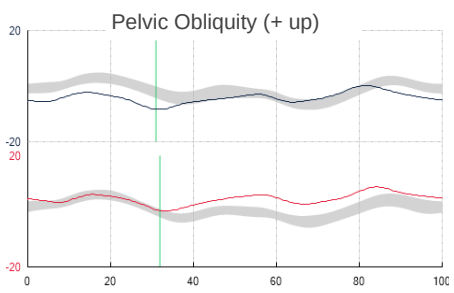


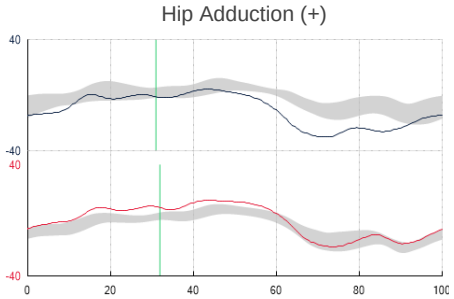


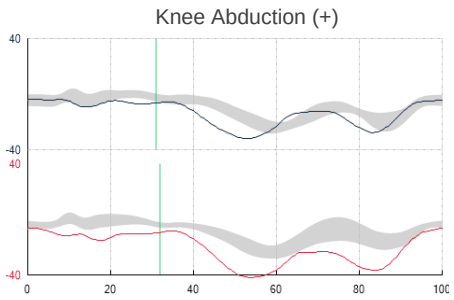


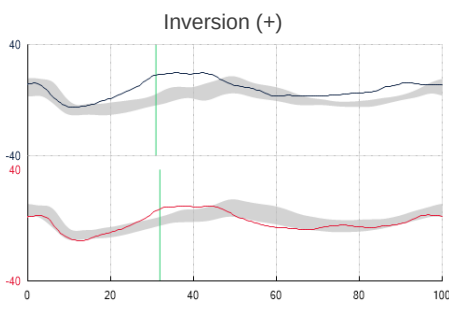


FRONTAL

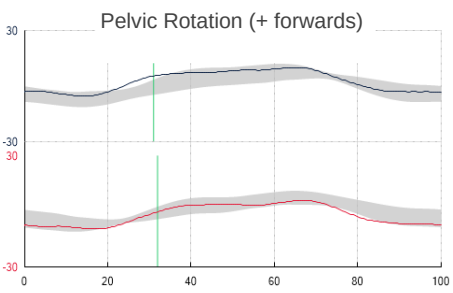


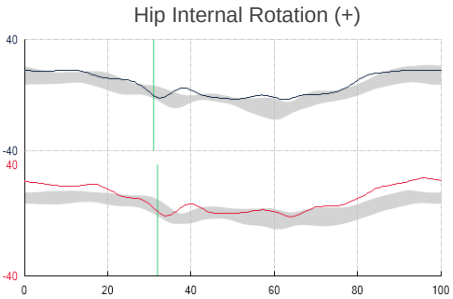


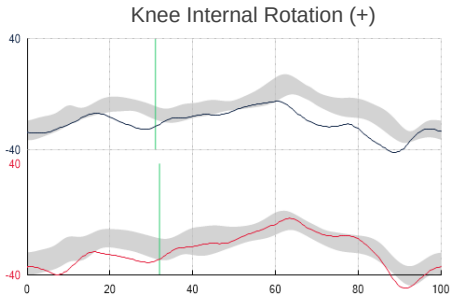


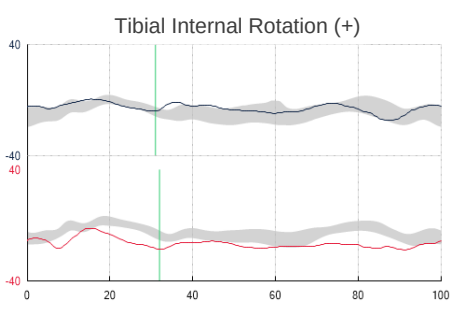


TRANSVERSE





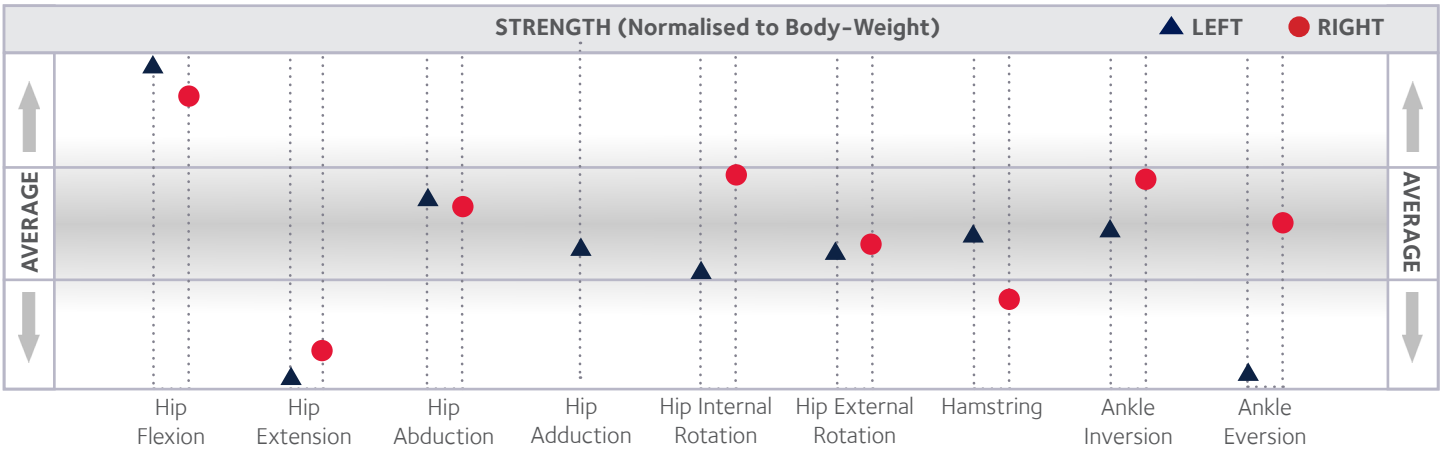


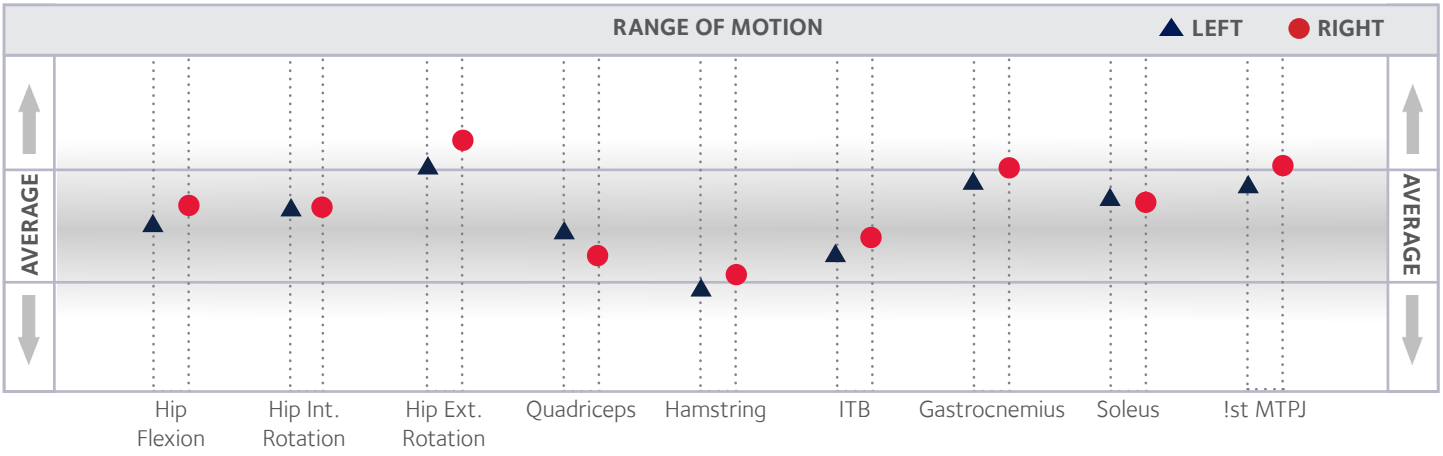


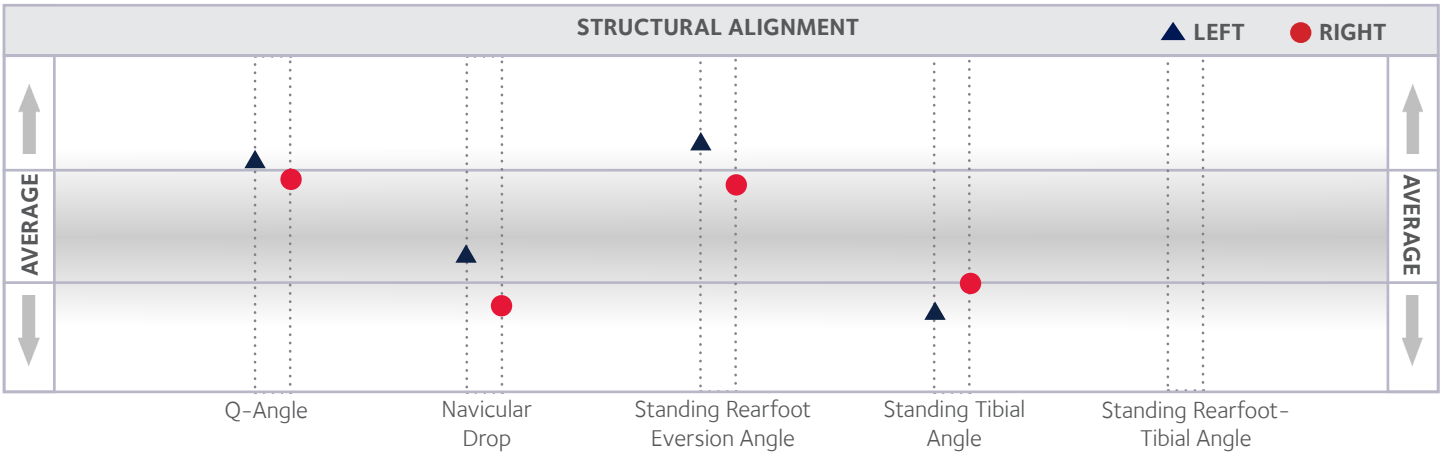
Note the excessive plantarflexion throughout the push-off phase of the gait cycle.

CLINICAL EXAM PARAMETERS

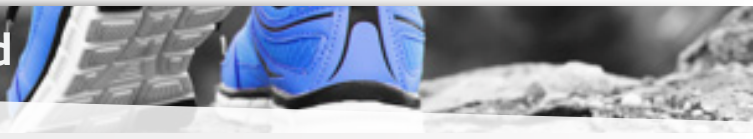
Trial Conditions: MSK Advanced on 06/03/2017







CLINICAL EXAM PARAMETERS cont'd



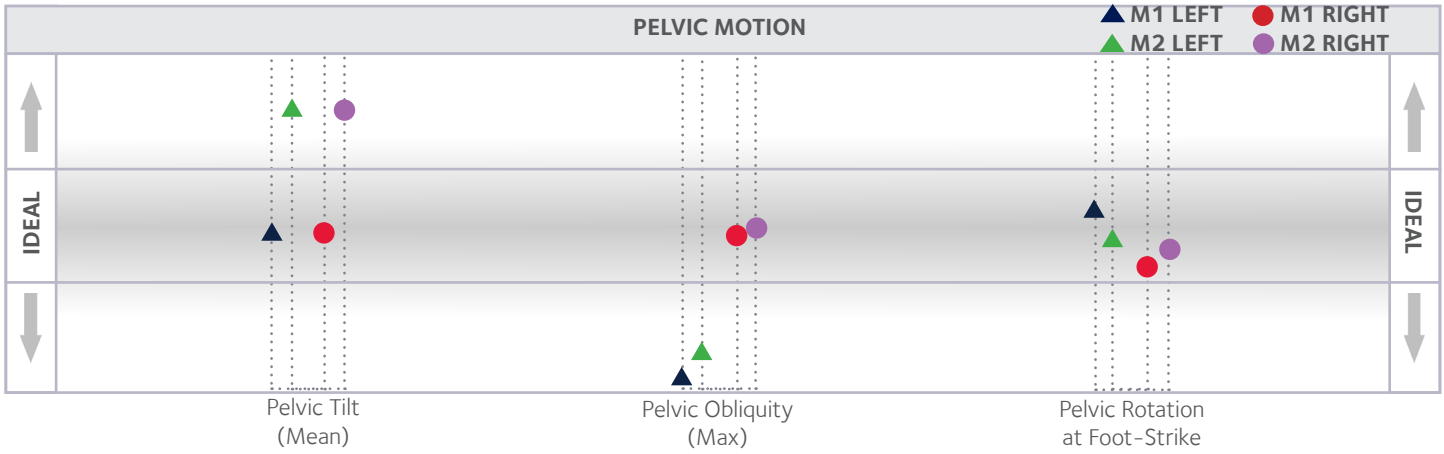
Trial Conditions: MSK Advanced on 06/03/2017

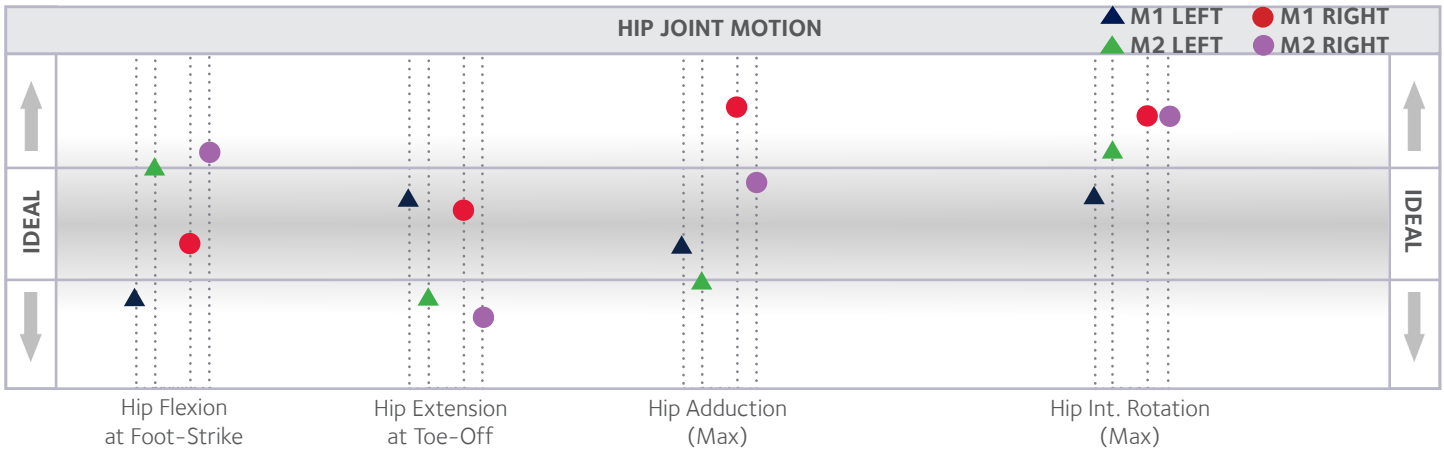
PARAMETER (Units) Please note that your clinician will have used his/her clinical judgement to select the combination of clinical tests most appropriate for you.		YOUR RESULT L | R	CONTROLS (Mean) L | R
STRENGTH (Normalised to BW)			
Hip Flexion		19.2 | 21.0	12.2 | 13.9
Hip Extension		17.3 | 17.3	43.6 | 45.6
Hip Abduction		13.4 | 13.4	12.3 | 12.8
Hip Adduction		261	276
Hip Internal Rotation		13.0 | 15.9	15.6 | 14.0
Hip External Rotation		16.7 | 17.7	17.7 | 18.5
Hamstring		20.8 | 16.3	21.7 | 22.7
Ankle Inversion		19.4 | 24.7	19.8 | 21.1
Ankle Eversion		14.2 | 26.2	28.8 | 26.2
RANGE OF MOTION (Degrees)			
Hip Flexion (Thomas Test)		79 | 76	79.4 | 79.4
Hip Internal Rotation		47 | 44	44.1 | 46.3
Hip External Rotation		52 | 54	42.2 | 40.7
Quadriceps		4 | 4	3.8 | 2.7
Hamstring		27 | 24	18.0 | 18.8
ITB		69 | 67	65.4 | 65.4
Gastrocnemius		48 | 49	42.1 | 41.4
Soleus		45 | 45	41.9 | 42.3
1st MTPJ		90 | 93	77.5 | 74.8
STRUCTURAL ALIGNMENT (Degrees Unless Specified)			
Q-Angle		17.0 | 16.0	13.9 | 13.9
Navicular Drop		6.0 | 4.0	7.0 | 7.0
Standing Rearfoot Eversion Angle		7.0 | 4.6	2.5 | 2.5
Standing Tibial Angle		2.6 | 4.0	6.6 | 6.6
Standing Rearfoot-Tibial Angle		- | -	3.7 | 3.7
Leg Length (mm)		- | -	- | -
Foot Posture Index		- | -	- | -
FUNCTION			
Calf Raises		29 | 28	19.1 | 20.3
Balance	Single Leg	30.0 | 30.0	Target 30s
	Single Leg Eyes Closed	30.0 | 16.2	Target 30s
	Balance Board	18.6 | -	Target 30s
	Balance Board Eyes Closed	- | -	Target 30s
Bridge	Both | Right Leg Raised | Left Leg Raised	30.0 | 30.0 | 30.0	Target 30s
Plank	Anterior	30.0	Target 30s
	Posterior	30.0	Target 30s
	Medial	30.0 | 30.0	Target 30s
	Lateral	30.0 | 30.0	Target 30s
Double Leg Squat (observations noted)		Medial knee dive.	
Single Leg Squat Left (observations noted)		No problems.	
Single Leg Squat Right (observations noted)		Medial knee dive.	

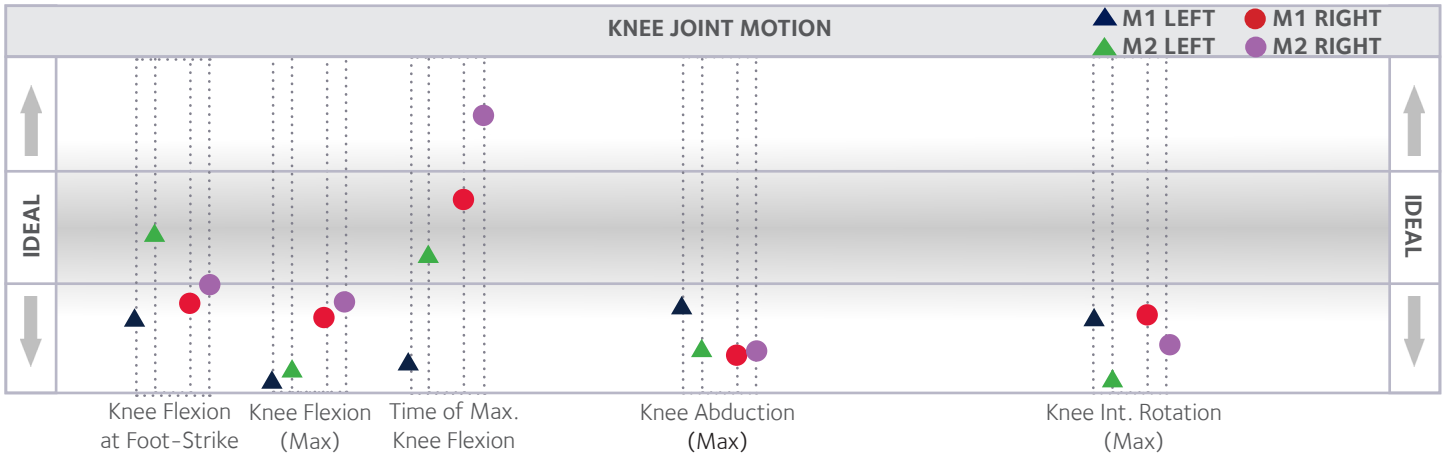
GAIT ANALYSIS COMPARISON

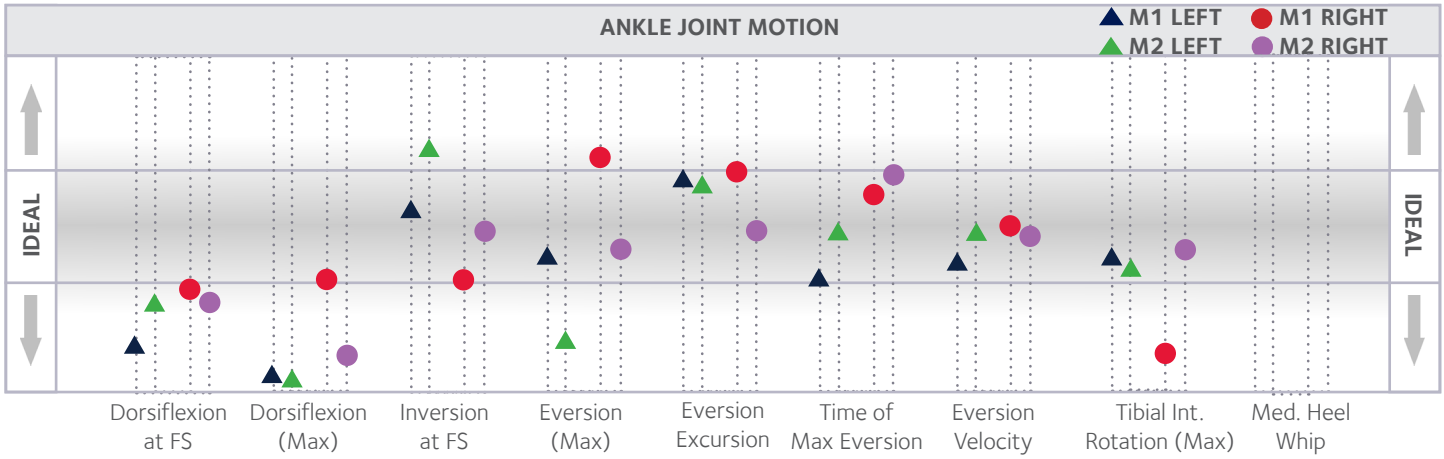
Trial Conditions Measurement 1: Running at 6:30 min/mile with neutral footwear on 16/02/2017 (initial)

Trial Conditions Measurement 2: Running at 10 min/mile with neutral footwear on 23/02/2017 (initial)









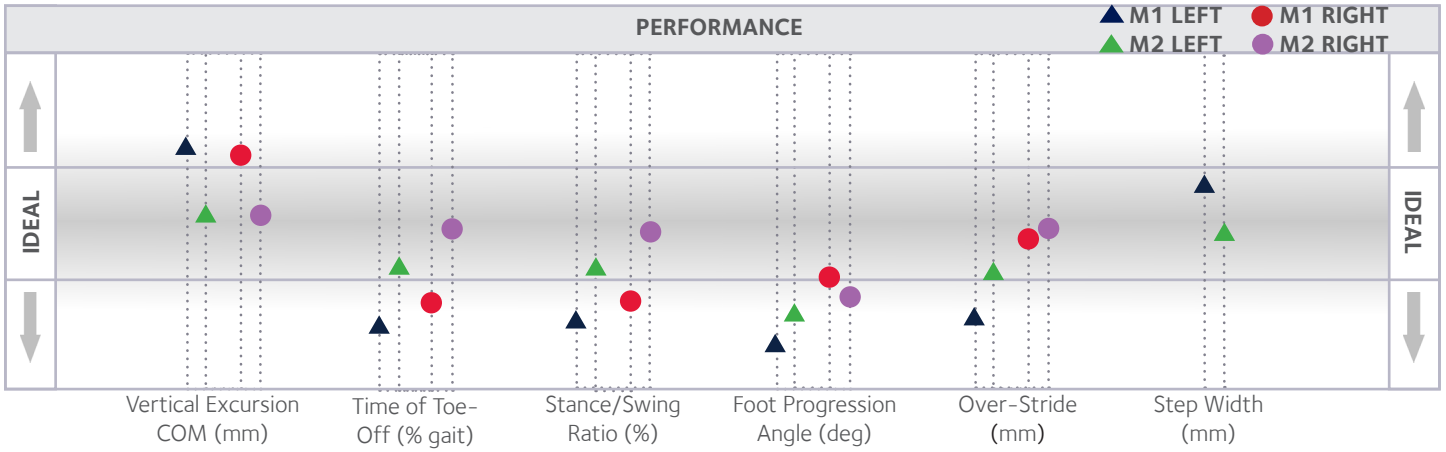
GAIT ANALYSIS COMPARISON cont'd

Trial Conditions Measurement 1: Running at 6:30 min/mile with neutral footwear on 16/02/2017 (initial)

Cadence	Step Width	Vertical Excursion	Over-stride
183	83	98	109
Mean: 190	Mean: 74mm	Mean: 81mm	Mean: 147mm

Trial Conditions Measurement 2: Running at 10 min/mile with neutral footwear on 23/02/2017 (initial)

Cadence	Step Width	Vertical Excursion	Over-stride
167	99	102	48
Mean: 171	Mean: 101mm	Mean: 99mm	Mean: 72mm



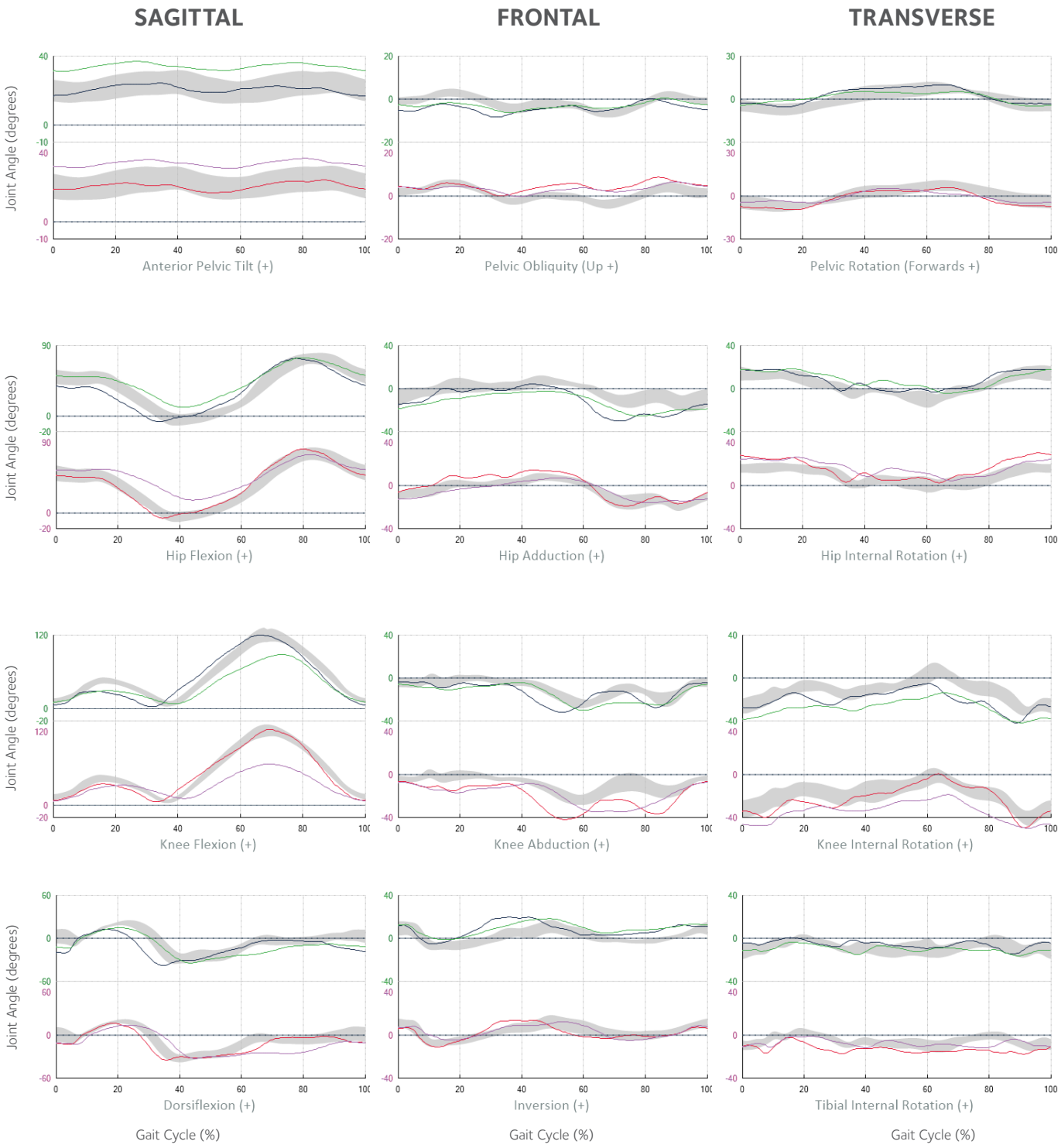
PARAMETER Units in Degrees Unless Specified Otherwise	M1 (Mean (STD)) L | R		M2 (Mean (STD)) L | R	
Pelvic Tilt (mean stance)	20.81 (0.66)	20.69 (0.8)	34.16 (0.58)	33.73 (0.53)
Pelvic Obliquity (max stance)	-2.34 (0.65)	5.93 (0.95)	-1.73 (0.79)	4.55 (0.76)
Pelvic Rotation at Foot-Strike	-3.2 (1.34)	-7.69 (1.46)	-4.57 (1.47)	-4.42 (1.22)
Hip Flexion at Foot-Strike	38.07 (1.1)	47.64 (1.11)	51.26 (1.26)	54.59 (0.97)
Hip Extension at Toe-Off	-5.55 (1.01)	-3.39 (1.61)	10.98 (0.83)	17.05 (0.87)
Hip Adduction (max stance)	0.45 (0.82)	10.04 (0.91)	-3.48 (0.49)	4.2 (0.68)
Hip Internal Rotation (max stance)	18.27 (0.92)	28.03 (1.36)	18.55 (1.1)	26.27 (1.32)
Knee Flexion at Foot-Strike	5.14 (1.56)	7.42 (1.99)	10.23 (1.68)	6.33 (1.06)
Knee Flexion (max stance)	28.27 (1.31)	34.33 (1.17)	28.69 (1.4)	32.45 (1.03)
Time of Max Knee Flexion (% gait)	13.36 (0.86)	16.29 (0.93)	17.42 (1.05)	21.61 (1.55)
Knee Abduction (max)	-3.68 (0.45)	-6.46 (0.7)	-4.46 (0.4)	-7.34 (0.71)
Knee Internal Rotation (max)	-14.12	-23.57	-25.86	-29.36
Dorsiflexion at Foot-Strike	-19.68	-11.31	-12.6 (1.87)	-11.17
Dorsiflexion (max stance)	12.32 (0.82)	16.78 (0.63)	14.21 (0.82)	13.82 (0.8)
Dorsiflexion at Toe-Off				
Inversion at Foot-Strike	11.16 (1.56)	6.32 (1.46)	12.23 (1.62)	7.11 (1.19)
Eversion (max stance)	5.8 (1.08)	12.01 (1.09)	1.63 (0.72)	5.28 (1.11)
Time of max eversion (% gait)	10.83 (0.8)	12.83 (0.64)	15.17 (1.54)	17.3 (1.61)
Eversion Excursion	23.46 (1.17)	23.44 (1.21)	17.2 (1.5)	14.52 (1.36)
Eversion Velocity (degrees/second)	323.16	427.97	299.16	321.52
Medial Heel-Whip				
Tibial Internal Rotation (max)	-0.37 (0.36)	-3.81 (1.12)	-3.82 (1.02)	-0.95 (0.95)
Static Vertical Off-Set Angle				
Vertical excursion centre of mass (mm)	98.14 (4.78)	98.12 (4.68)	102.36	101.97
Time of toe-off (% gait)	30.9 (0.63)	31.87 (0.73)	40.33 (1.41)	41.86 (0.97)
Stance/Swing Ratio (%)	44.74 (1.32)	46.8 (1.58)	67.68 (3.92)	72.06 (2.86)
Foot Progression Angle	-1.28 (1.1)	7.36 (1.46)	-1.31 (1.52)	2.07 (1.04)
Over-Stride (mm)	109.3 (13.6)	140.5 (12.4)	48.3 (9.7)	72.1 (10.3)
Step-Width (mm)	82.51 (15.4)		98.74 (18.11)	
Cadence (Steps/Minute)	182.77		166.81	

GAIT ANALYSIS GRAPHS COMPARISON

Trial Conditions Measurement 1: Running at 6:30 min/mile with neutral footwear on 16/02/2017 (initial)

Trial Conditions Measurement 2: Running at 10 min/mile with neutral footwear on 23/02/2017 (initial)

Left Leg 1
Left Leg 2
Right Leg 1
Right Leg 2
Uninjured Controls



SOME USEFUL INFORMATION

The Gait Cycle

The gait cycle is divided into stance and swing phases: stance is when your foot is on the floor and swing is when it is in the air. Foot-strike and toe-off represent the beginning and end of stance respectively.

Gait analysis graphs are plotted with the gait cycle on the horizontal axis: foot-strike is at 0% and the same foot comes back into contact with the ground again at 100%. Toe-off is represented by a vertical line.

Describing Human Motion

Human motion is defined in three planes - looking at you from the side (the sagittal plane), from the front/back (the frontal plane) and from the top/bottom (the transverse plane).

Sagittal Plane
(side view)

Frontal Plane
(front view)

Transverse Plane
(top view)

We measured the exact movement of your joints in each of these 3-dimensions. For example, we measured how much your knee bent and extended (side view), how much it moved inwards and outwards (front view) and how much it twisted (top view).

The Gait Analysis (Curve) Graphs

Each of the three planes (side, front and top views) for your pelvis, hip, knee and ankle joints are plotted on a separate graph and the resulting 12 graphs are the ones that you see in your report (see next page for joint motion descriptions). The sagittal (side) views are all shown in the left column, the frontal (front) views are all shown in the central column and the transverse (top) views are all shown in the right column.

The vertical axis shows the joint angle in degrees and the horizontal axis represents the gait cycle (0% = footstrike, vertical line = toe-off, 100 % = foot-strike again). The right and left legs are represented by separate lines. The shaded areas represent the mean and standard deviation of our uninjured controls and by comparing your graphs to these shaded areas we can identify any abnormal patterns in your gait.

The Parameter (Dotted) Graphs

There are many gait parameters that are known to be associated with musculoskeletal injuries. The Run3D software automatically extracts these parameters from your gait data, compares them to our database of uninjured controls and presents them in a simplified format to help us identify injury risk-factors.

Ideally, you are looking for your dots to be within the shaded region (comparable to our uninjured controls) and for your right and left dots to be similar (a symmetric gait pattern).

REPORT PARAMETER GLOSSARY

Cadence is the number of steps you take per minute and is an important parameter for determining running speed and efficiency. Step rate, or cadence, is one of the most successful parameters to manipulate for gait retraining purposes. Higher step rates are considered to be more efficient and less likely to cause over-stride.

Step Width is the distance between your feet whilst running/walking. Excessive and reduced step widths are associated with running related injuries such as iliotibial band syndrome.

Vertical Excursion is the distance that you move upwards whilst running. This is important when measuring running efficiency and your force impact when landing. A lower vertical excursion value is considered ideal.

Over-stride is how far in front of your centre of mass the foot lands and is considered to be an important risk factor for a running related injury. Foot placement closer to your centre of mass (a reduced over-stride) is preferred.

Foot Progression describes the position of your feet as you are running. Increased foot progression means that you are running with your toes pointing outwards too much. Foot progression angle is often related to other biomechanical parameters at your hips and knees.

Time of Toe-Off & Stance/Swing Ratio both describe the amount of time spent with the foot in the air (swing) versus on the ground (stance). The faster you run, the more time you spend in swing compared to stance and so a decreased time of toe off and decreased stance/swing ratio are preferred by coaches.

Anterior Pelvic Tilt is the forwards and backwards movement of the pelvis. An anteriorly tilted pelvis is when the front of your pelvis is 'tipped' further forwards and a posterior pelvic tilt is when it is back. An excessive anterior pelvic tilt often results in reduced activation of the glute muscles and overloads the lumbar spine to create hip extension. Triathletes and individuals with tight hip flexors will often experience an anterior pelvic tilt when running. If your normal standing position is in an anterior pelvic tilt, this will impact your dynamic results.

Pelvic Obliquity is a frontal plane measurement and describes the side-to-side movement of the pelvis relative to the horizontal. This measurement is important as it helps to determine the position and control of the pelvis when the foot is on the ground. Asymmetrical or abnormal movements are risk-factors for lateral hip, knee and groin injuries.

Hip Extension at Toe off is the backward movement of the hip just before your foot comes off the ground and increases with increasing running speed. The gluteus maximus is the main hip extensor of the body and plays a large role in this movement. Hip extension at toe-off can be influenced by tight hip flexors and the position of the pelvis in excessive anterior or posterior pelvic tilt.

Hip Adduction is the side-to-side movement of the thigh towards the body when your foot is on the ground. This measurement is important for determining the dynamic stability of the hips whilst running and abnormal movements are associated with several running related injuries.

Hip Internal Rotation is the transverse plane movement of the thigh rotating inwards in relation to the pelvis. Excessive rotational movements in the hip are associated with weakness and instability, whereas reduced movements may indicate stiffness or restrictions. Both can lead to biomechanical issues in the hip, knees and ankles.

Knee Flexion at Foot-Strike is the amount that the knee bends as your foot strikes the ground. This parameter helps to identify an over-stride. A greater amount of knee flexion at foot strike is considered ideal as it allows for impact closer to the body's centre of mass.

Knee Abduction is the inward collapse of the knee towards the midline. Abnormal knee abduction is largely influenced by movement patterns in the hip and knee joints (as well as any internal injuries such as an ACL repair). Excessive knee abduction is associated with overuse injuries such as iliotibial band syndrome and patellofemoral pain syndrome.

Knee Internal Rotation describes the amount that the tibia (lower-leg) rotates inwards relative to the thigh. It is influenced by hip rotation and tibial rotation. Both increased and decreased movements can alter the loading patterns at the knee and patellofemoral joints, and lead to injury.

Dorsiflexion at Foot-Strike is the angle of the foot upwards as it hits the ground. This parameter represents how an individual is striking the ground – heel, midfoot, or forefoot. An excessive amount of dorsiflexion indicates heel striking, whereas a reduced amount of dorsiflexion usually represents forefoot striking.

Peak Dorsiflexion is the maximum amount that the ankle bends during stance. Reduced dorsiflexion can lead to compensatory movements occurring both at the foot and ankle, as well as further up the leg.

Maximum Eversion is often referred to as pronation. This is a combination of movements in the ankle and is necessary for shock absorption as your foot hits the ground. An excessive amount of eversion has been associated with many overuse running injuries. Reduced maximum eversion can reduce the shock absorption capabilities of the lower-extremity and is often associated with bony injuries, such as stress fractures.

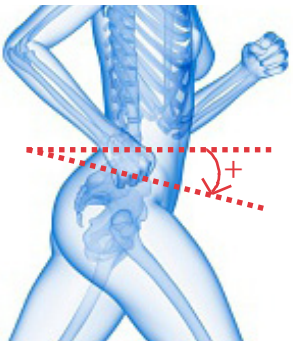
Time to Maximum Eversion describes the time at which the foot begins to re-invert. Staying everted for too long results in an increased time to maximum eversion (sometimes referred to as prolonged pronation) and has been associated with common knee injuries. Not staying everted for long enough results in a decreased time, which can reduce the shock-absorption capabilities of the foot and lead to bony injuries such as stress fractures.

Eversion Excursion describes the range of eversion-inversion movement that occurs during the first half of stance. The information can be used by your clinician to better understand the dynamic function of the foot: too much movement can indicate a lack of stability and control, whereas too little can indicate stiffness.

Eversion Velocity describes how quickly the foot everts after striking the ground. Movements that are too fast or too slow can indicate stiffness and/or a lack of stability and control of the ankle muscles.

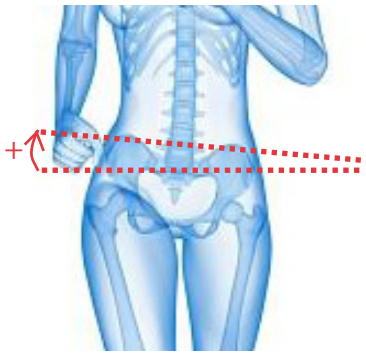
Tibial Rotation is the amount that the lower-leg rotates relative to the foot. It is associated with ankle eversion, knee rotation and hip rotation.

Anterior/Posterior Pelvic Tilt



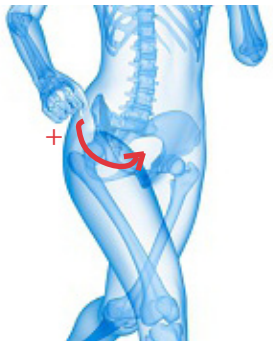
Anterior (+ve) is when the front of the pelvis tips forwards and the back rises. Too much can lead to reduced hip extension and overstriding.

Pelvic Obliquity



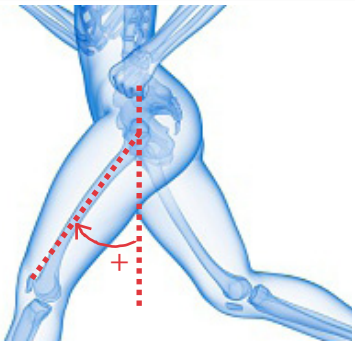
Pelvic obliquity (+ve up) is when one side of the pelvis drops downwards and the other side rises. Too much influences hip motion and can lead to injury.

Pelvic Rotation



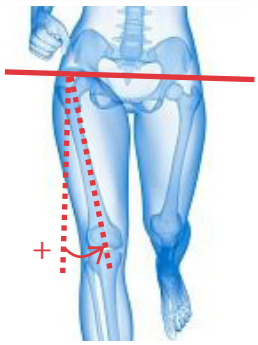
Pelvic rotation (+ve forwards) is when one side of the pelvis twists inwards.

Hip Flexion/Extension



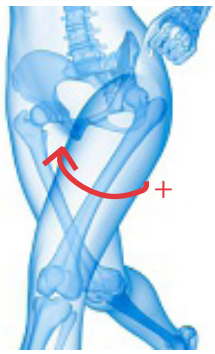
The hip is flexed (+ve) when the leg is lifted in front of the body and extended when the leg is behind the body. Avoid decreased hip extension at toe-off.

Hip Adduction/Abduction



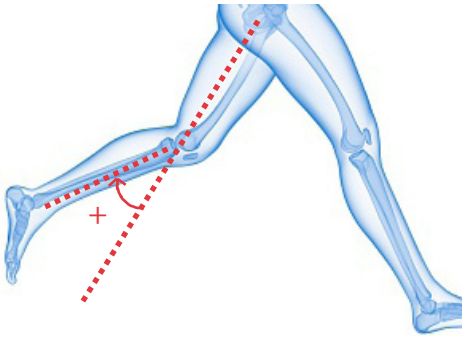
Hip adduction (+ve) is when the thigh collapses inwards relative to the pelvis. Too much hip adduction should be avoided as it can lead to injury.

Hip Rotation



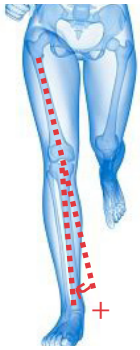
Hip rotation (internal +ve) is when the thigh twists inwards and outwards relative to the pelvis. Too much hip rotation can lead to injury.

Knee Flexion/Extension



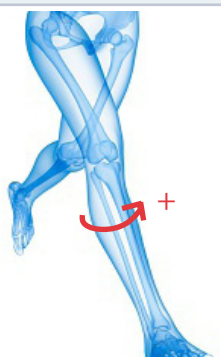
The knee is flexed (+ve) when it is bent and extended when it is straight. Too much peak knee flexion increases patellofemoral joint contact forces.

Knee Adduction/Abduction



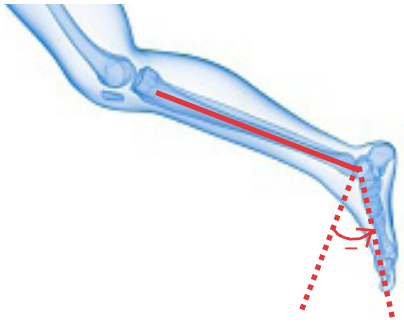
Knee abduction (valgus) (+ve) can be visualised as knock-knees. Knee adduction (varus) can be visualised as bow-legs.

Knee Rotation



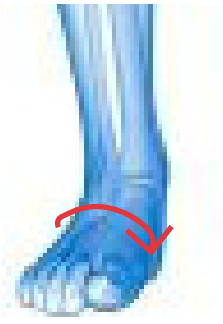
Knee rotation (internal +ve) is when the lower-leg twists inwards relative to the thigh. Abnormal motion can alter the forces at the knee and knee-cap.

Ankle Dorsiflexion/Plantarflexion



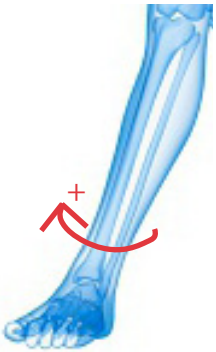
Plantarflexion (-ve) is when the toes are pointed towards the ground and dorsiflexion (+ve) is when the toes are lifted upwards towards the lower-leg.

Rearfoot Eversion/Inversion



Inversion (+ve) and eversion are when the back of the foot roll outwards and inwards relative to the lower-leg.

Tibial Rotation



Tibial internal rotation (+ve) is when the tibia twists inwards relative to the rear-foot.

WHAT HAPPENS NEXT

We hope that your Run3D assessment was beneficial and worthwhile. Your clinician will have interpreted the results presented in this report and used the information to provide you with an optimised rehabilitation programme and performance recommendations. These recommendations might include gait retraining, exercise therapy, strength and conditioning, orthotic/footwear solutions, physiotherapy treatment or referral to another specialist.

It is extremely important that you heed the advice given to you by your clinician in order to benefit from your Run3D assessment and achieve your goals.

If you have any questions about your report, then please do not hesitate to contact your clinician directly.

DISCLAIMER

This report presents the data collected using a Run3D gait analysis system. The clinician who carried-out your assessment is not employed by Run3D Limited and is a healthcare professional providing independent advice and services.

All results presented in this report must be interpreted by a trained healthcare professional and you are at all times responsible for the actions you take as a consequence of the results presented here.

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