FCS

FUNDAMENTAL CAPACITY SCREEN

Name:

FCS Manual

V7.5

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Preface

The work in this manual aims to protect us from our own subjectivity. It is going to be as unique and unorthodox as the Functional Movement Screen was when it was introduced in the late 1990s. At that time, we assumed that if an individual had good flexibility and strength, then by default, their movement patterns should be impeccable.

It now seems obvious that this is not necessarily true.

In the 1990s, our measurement tools for flexibility and mobility were not vetted through all the movement patterns necessary for functional development. Likewise, our simple tests for strength, or even motor control, did not give us a clear perspective of who would function well in the next difficult environment.

Why not simply look at movement patterns?

This question was the premise of the Functional Movement Screen, developed, not from sports science, but from the neurodevelopmental stages that all humans, regardless of culture, embrace.

Are we ignoring an important fundamental element?

We understand DNA—it builds our structure. But do we have functional DNA? We express movement patterns without any external teaching whatsoever. There seems to simply be an internal drive to explore movement patterns. Over time, and with plenty of feedback from many great minds involved with the Functional Movement Screen, it has also become evident that there is an elemental expression of our energies as well as our patterns. Long before learning and acquisition of sport-specific skill are present, we express our energy in fundamental ways.

That energy can (and should) be measured. The engine that allows us to produce different forms of energy to control our motion, maintain our posture, explode against gravity and utilize stored energy when necessary can be screened without bias to methodology, training tools or physical development strategy.

The Functional Movement Screen and Y-Balance Test establish a foundation for movement health, symmetry and function. We would be missing a crucial step if we did not also measure and improve our energy resources or fundamental capacities, before we expect to meet our true potential in sport or activity specific programming.

We sometimes think we manufacture our power or work capacity, but we don't. We combine and refine these elements, but we do not create them. There is a clear analogy when you look at the environment and industry: we are resourceful with the elemental resources of our planet, but we did not create them. We combine elements together to make metal, but we did not create those elements.

If we take the same approach to human fitness and performance, we realize that we can develop, refine and combine the elements observed in fundamental movement capacity. We also realize that we don't create them.

This is the beginning; we must start here because most of our movement health, rehabilitation, fitness and performance problems and mistakes grow from assumptions that should not be made in the first place.

We, as humans, do not manufacture the elements of movement resources:
Motor control, work, power and energy storing (plyometric abilities), though we grow, refine and combine them by shaping environments to create safety and physical education. These elements appear as the process of growth and development runs its natural course.

Preface

The Fundamental Capacity Screen is an attempt to protect us from our own subjectivity. The tests in this manual are not a haphazard montage of what we have done in the past with modifications to suit technology. They are an attempt to express the elements of performance before the debates about skill acquisition and specific performance goals begin. Every skill has a base of athleticism or physical capacity that supports it. If the skill, the teaching and the methodology are the seed, the base athleticism and expression of elemental energy is the soil.

In short, the seed of physical resourcefulness is best planted firmly in a soil of balanced and complementary physical resources.

Please look at these tests, not against the performance testing that you know or feel comfortable with, but embracing the facts:

- If we can demonstrate single limb competency we are balanced in the four quadrants of our body.
- If we are stronger, we should carry with integrity.
- If we are more powerful, we should be able to work against gravity impressively.
- If we store energy, we should be able to measure it.

Therefore, if you have been working on balance, strength, power or efficient energy storing, we should easily be able to measure the results of your work simply and objectively. Let's begin by discussing the elements of movement capacity without any bias. Then, on that fundamental, non-biased platform we can start to construct all the specific expressions of human movement potential and create a better platform for long-term movement development.

Introduction

The Fundamental Capacity Screen quantifies the elemental resources that support human performance, we look at the metrics of fundamental movement capacities.

In 1997, Functional Movement Systems introduced the Functional Movement Screen. FMS looks at the vital patterns that make basic function possible. These movement patterns do not come from exercise or athletics, but rather fundamental patterns in growth and development. However, it is not hard to see that these movements are the platform on which exercise and athletics are built.

These fundamental patterns are recognized as milestones, or stages, as infants develop, become ambulatory and explore their environments. Typically, we consider performance and fitness to be a result of training or practice. But, is there a fundamental part of performance that is actually part of our DNA?

Before our environments start to shape and influence us, and before our desires to train and develop cause adaptation, is there a fundamental physical capacity—not simply an ability to perform a pattern, but the ability to perform that pattern with a certain amount of capacity, volume, consistency or resistance to fatigue?

Immediately after infants demonstrate the developmental patterns (developmental experts call this function), we see them practice these patterns in volume. If we were to place these activities in categories, we would see crawling and climbing, lifting and carrying, and running and jumping as fundamental movement capacities that do not depend on instruction or teaching.

A developing infant will explore these movement capacities as long as they're in a safe environment and their biological needs (including nutrition, hydration, rest and regeneration) are met. If we were to look at these fundamental physical or movement capacities, we would see the building blocks of all the different activities, athletics, exercises and occupations that we do. We all begin our journey with an operating system for movement that is very much the same. Our experiences and exposures can even complement or erode this operating system. As we grow, compete, work, and train we become very different from each other, and we each confront unique and individual obstacles, habits and injuries. The best way to achieve our true potential and regain our balance and harmony is so simple it often eludes us. We should regain and repair our original operating system by maintaining a consistent focus on our basic movement patterns and capacities.

Introduction

Historically, neuroplasticity has not been a priority. Previous exercise physiology has focused more on tissue and energy system adaptation over neurological adaptation. This is an example of our scientific bias—we like to study what we can see and explain and ignore that which we cannot see and explain.

However, the ultimate expression of human performance cannot be explained by a disproportionate amount of resources bestowed onto one person over another. It is better explained by significantly greater resourcefulness drawing from the same pool of elemental resources.

Remember:

We can use our resourcefulness to develop skill once we have developed our movement resources to a minimally acceptable level of quality. However, when we allow our resources to fall below a vital limit, most of our resourcefulness is simply used to compensate, causing inefficiency, unnecessary stress, compromised learning and increased potential risk of injury.

Simply stated, our neurological systems are more sensitive and quicker to adapt than our tissues. Moreover, the changes required for neurological adaptation consume less resources and are more sustainable over time.

If we test the fundamental physical attributes of these movement capacities, we can lie a sustainable foundation for performance. We may realize that a deficiency in a more skill-based performance test could simply be representing a lack of skill. Or, it could be creating a compounded effect in a fundamental attribute that would not be addressed by the solution provided by skill training.

When we add more specific performance tests (tests for the particularly favorable attributes of an activity, sport or occupation) alongside fundamental movement capacities, we can easily look at the information and decide if this is a skill-based problem that needs more specific and focused attention or if this is a fundamental limitation that should be corrected at a fundamental level and not compounded by skill.

Since it is better to look at these problems at two levels of skill, it should be understood the fundamental and first level of skill operates off of a pre-installed drive, whereas the adapted or developed level of skill rests firmly upon that pre-installed movement capacity with the added benefit of specific intent and deliberate practice — Specific Adaptation to Imposed Demand (SAID Principle).

From this observation, we can construct four points that could be plotted like a compass so that we can see where our next best effort should occur. Success in training and rehabilitation relies on the adjustments that we make in the environment to both manage risk and create greater precision in focused development.

By having fundamental performance tests alongside specific performance tests, we can find out if specific training could be engineered to create both a fitness and skill development load or if more general fundamental movement training should be pursued to both generate a fitness load and lie a better foundation for skill adaptation. Specific training may have a beneficial general fitness effect, but we must never assume that it does or does not.

We should never trust the effectiveness of our own programming, because we have an undeniable bias.

Therefore, we must test it.

Definitions and Concepts

Movement Health - Potential function

Having sufficient structure to support potential function. The absence of pain with fundamental and functional movement patterns. Medical treatment not required and not possessing temporary/permanent disability.

Movement Function -Demonstrated function

The ability to be placed in an environment and be able to survive and develop. If you have dysfunction, you will be in the lower percentiles of development progress (i.e., those who possess health and function will be able to adapt at an average level or better than average). A way to grade this would be having 2s or greater on the Functional Movement Screen.

Movement Capacity -Demonstrated capacity

Irreducible physical qualities that are not sport/activity specific and are possessed at a young age.* By mapping these qualities, we can identify a road block that needs to be addressed prior to optimizing specific skill development.

***4-to-5-year-old movement milestones:**

- Stands on one foot for ten seconds or longer
- Hops
- Somersaults
- Swings
- Climbs
- May be able to skip

Dysfunction

In relation to your own body, you possess a characteristic that will negatively impact your progress or success compared to others. (e.g. same age and gender)

Deficiency

In relation to others in the same environment as you (e.g. sport, position, activity, role and job) you possess a characteristic that, although not dysfunctional, is less than successful individuals in the same environment and will potentially keep you from achieving optimal performance.

Protect

Protect from opportunities that do not promote productive feedback and/or impose risk. Screen and Identify possible movement pattern dysfunction or pain. A screen creates direction and focus. It's not an assessment. It lets us know if we need FURTHER assessment in a direction.

Correct

Create positive short-term response by magnifying dysfunction and applying an appropriate corrective drill that translates to an improvement in the pattern. This is a focused or constricted situation scaled to a level where the individual can have deliberate practice and actionable feedback.

Develop

Individuals free from movement dysfunction and deficiency should focus on skill acquisition, physical consistency and aspects of technical and tactical performance.

Screening Considerations

1. It is recommended that all participants complete the PAR-Q or similar physical activity readiness questionnaire. In addition, have the participant complete a medical and physical injury questionnaire.
    - Take note of the participant's history with occupation, athletics, activities and exercise (weightlifting, running, plyometrics, etc.).
    - This will help you ensure that the person is safe to perform the screening or if you should start with proxy screens until the participant has demonstrated enough competency.

2. It is recommended that all participants have blood pressure and heart rate taken to ensure cardiovascular readiness for screening. Resting blood pressure should be below 140/90 prior to testing unless cleared by a physician.

3. We strongly recommend that all participants have a Functional Movement Screen completed. This can help uncover any potential orthopaedic problems (particularly pain with movement or clearing tests that may affect the participant safely completing the screening).

4. Footwear: We recommend that the client wear the shoes that they train in the most. The goal is to produce consistent and reliable screening conditions from the first screen to any re-screening conditions. In most cases, our clients live and function in shoes and this is the most reliable way to look at an individual's movement that they experience in their current lifestyle.

5. Screening surface: non-slip, track or sport flooring is recommended.

Note Pain & Previous Injuries/Surgeries:

Pain

By questionnaire and verbal interview, be sure that the person does not have current pain or injury in their body. Ask the question in multiple ways to ensure accurate report of pain as many people do not perceive pain with movement as a problem. Pain should be addressed by a qualified health care provider prior to screening.

Previous injuries/surgeries

Pay particular attention to participants with past injuries. Although the FCS is not more physically demanding than activities most athletes or fitness participants perform in training or competition, as a professional it is your responsibility to ensure the person you are screening is safe to perform the screens.

General Physical Testing Safety

From American College of Sports Medicine ACSM's Health-Related Physical Fitness Assessment Manual, 4th Edition. Lippincott Williams & Wilkins, 2013.

ACSM's Guidelines for Exercise Testing and Prescription, Ninth Edition emphasizes this point stating, "The risk of an exercise-related event such as sudden cardiac death or acute MI is greatest in those individuals performing unaccustomed physical activity, and is greatest with vigorous intensity, physical activity."

"Similarly, the risks of musculoskeletal injuries are greater in those individuals with known musculoskeletal diseases or previous injuries".

With any Fitness or rehabilitation testing, the following safety guidelines should be observed:

1. Informed Consent - this is a communication process, not just a form. Explain the purpose, procedure, risks, discomforts, benefits and alternatives, encouraging questions and ability to stop at any time.

   See ACSM example of informed consent
   http://certification.acsm.org/files/file/B_ExPrescripReferral_pdf.pdf

2. Pre-screening Assessment Screening
   - **a.** Dynamic process – additional information gathered may change if additional tests are performed or if testing is stopped altogether.
   - **b.** The goal is to identify any contradictions to testing using:
     - **i.** Medical contraindication (exclusion)
     - **ii.** Need medical evaluation conducted prior to screening (deferring)
     - **iii.** Which specific screens should be performed (limiting)
     - **iv.** Other health risk/medical concerns (e.g., diabetes mellitus or orthopaedic injuries) that may influence the decision about performing specific Health Related Physical Fitness assessments or the need to modify assessment procedures."
     - **v.** See Examples Contraindications to Exercise Testing ACSM
       1. These usually involve a history or signs/symptoms of cardiovascular, pulmonary or metabolic disease or risk factors for these diseases.
3. Full ACSM type health history questionnaire used by facility
4. Musculoskeletal health through FCS questionnaire as well as full Functional Movement Screen

Bottom Line

"Fitness professionals should always use prudent judgment when deciding whether a client needs a medical examination prior to HRPF assessment. If unsure, select the conservative option and require a physician's clearance."

American College of Sports Medicine. ACSM's Health-Related Physical Fitness Assessment Manual, 4th Edition. Lippincott Williams & Wilkins, 03/2013

FUNDAMENTAL CAPACITY SCREENING ADDITIONAL SAFETY MEASURES

Goal: Determine which tests are appropriate for THIS person today?

- Does their health history clear them to complete the FCS?
  > If not, then defer testing.
- Blood Pressure under 140/90?
  > If not, defer testing until under control and medical clearance given.
- Pulse no greater than 100
- Is there a history or report of pain? Is there a history or report of current or previous injury?
  > If yes, has the person received full medical clearance FOR THE ACTIVITY YOU ARE ABOUT TO DO?
  > If not, defer testing until medical clearance is given.

Review Par-Q

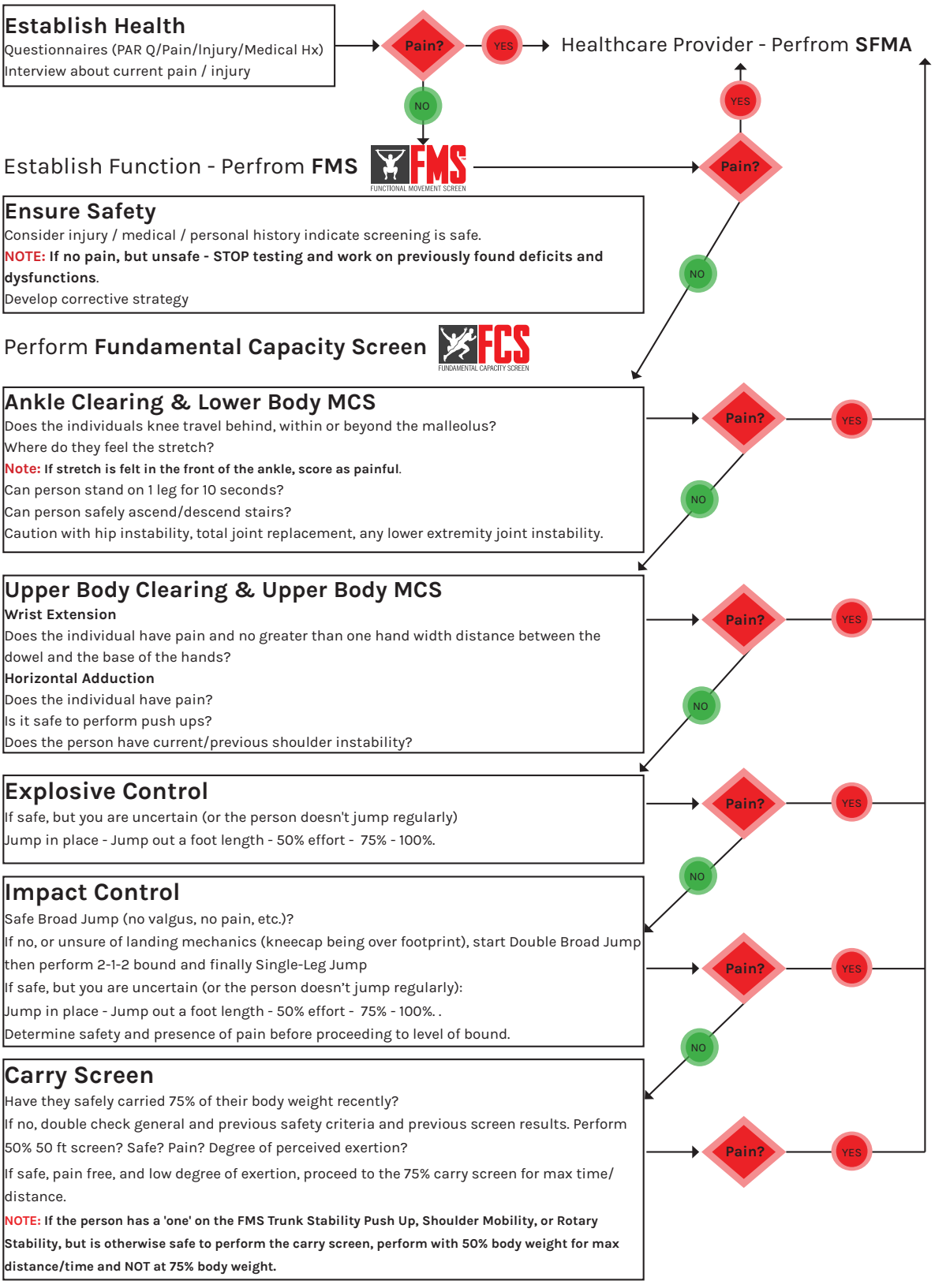
Review the FCS Questionnaire

Ask the following questions:

- Is the risk to collect this baseline worth the information you will gain?
- What environment will the person be in?
  > If they will not be in an environment that will have them do similar intensity of activities, then defer testing.
- Does their current function support capacity screening?
  > If there are 1s on the Functional Movement Screen, consider deferring testing, particularly if there is a history of Injury.
- Do the client's goals support capacity screening?

If additional testing will not change programming, the only reason to collect the additional information is to set a baseline. As a professional, you need to determine if setting the baseline for those additional tests is required.

Screening Order



Why do we perform the movement screen?

As a movement screening professional, you understand that the Functional Movement Screen sets a baseline for fundamental movement competency. The primary goal of movement screening is to quickly identify pain or limitations that need to be addressed. This was the focus of the FMS level 1 course; learning the FMS screen (7 movement patterns and 3 clearance tests).

Now we are going to shift focus to how you address issues found in the screen either through referral for pain or by using "corrective exercise." However, please remember, that if your screen is wrong or scored incorrectly, then your corrective strategies will be wrong.

While we all sit in the same room with varying backgrounds, there are things we can agree upon based on the goal of training for movement quality. The basis of improving movement that transfers to specific performance goals is the reason we value different aspects of training movement. The ability to express higher levels of neuromuscular control while improving our physical condition is the goal of functional exercise. Using the screen, we can identify the "weak link" and use "corrective exercise" as a gauge for proficiency and deficiency for specific movement tasks within a movement pattern. By using the corrective exercise to expose areas for improvement we apply strategies until the movement pattern has consistently shown proficiency. This is the application of "corrective" vs. "functional." And everyone in this room may have different strategies from our areas of expertise, but the goal is the same.

The FMS is best applied by having a deep familiarity with the Purpose, Description and Tips for Testing from your Level 1 manual or *Movement*. Then, the Verbal Instructions are used to ensure proper set up for every rep of the screen. After the setup is perfect and the movement pattern is being assessed, then apply the Scoring Criteria. At that point, the scores have meaning and can be applied correctly.

Remember the Purpose, Description and Tips for Testing are for you, the movement screening professional. The Verbal Instructions are for the individual being screened for ease of understanding, proper set-up and execution. Then you use the Scoring Criteria to properly "score" the movement.

FUNCTIONAL MOVEMENT SCREEN SCORE SHEET

NAME: DATE: DOB:

TIBIA HEIGHT: HAND LENGTH: AGE: GENDER:

SCREEN		RAW SCORE	FINAL SCORE	COMMENTS
DEEP SQUAT				
HURDLE STEP	R			
	L			
INLINE LUNGE	R			
	L			
ANKLE CLEARING - PAIN +/-	R			
	L			
ANKLE CLEARING - MOBILITY R-Y-G	R			
	L			
SHOULDER MOBILITY	R			
	L			
SHOULDER CLEARING +/-	R			
	L			
ACTIVE STRAIGHT-LEG RAISE	R			
	L			
TRUNK STABILITY PUSHUP				
EXTENSION CLEARING	+/-			
ROTARY STABILITY	R			
	L			
FLEXION CLEARING	+/-			
TOTAL SCREEN SCORE				

Raw Score: This score is used to denote right and left side scoring. The right and left sides are scored in five of the seven tests and both are documented in this space.

Final Score: This score is used to denote the overall score for the test. The lowest score for the raw score (each side) is carried over to give a final score for the test. A person who scores a three on the right and a two on the left would receive a final score of two. The final score is then summarized and used as a total score.

Clearing Test: A positive indicates pain. A negative indicates no pain. If pain is present (+), the score for that test would result in a 0. Ankle Mobility Clearing results are recorded as Green (G), Yellow (Y) or Red (R) and does not affect the final score for Inline Lunge.

FCS

FUNDAMENTAL CAPACITY SCREEN

FCS Principles

Once movement health and movement function are established, Fundamental Capacity Screening can take place. The guiding principles for the Fundamental Capacity Screen allow us to be certain that we are capturing the information we desire. We should:

1. Screen an irreducible movement capacity.
   The test needs to have a minimal learning curve and cannot require a sport/activity specific skill. The test does not use skill-based metrics.

2. Screen in a sequence that is exclusive but not inclusive.
   Performance in each of the four domains (quadrants) is not necessarily dependent on performance in the other quadrants. The domains may or may not have a relationship with each other. Failure in one domain does not guarantee failure in another.

Movement Control → Postural Control → Explosive Control → Impact Control

3. Build screens from a minimum effective ability concept.
   The test is viewed from a failure perspective not a success perspective (more is not necessarily better, however, less is measurably worse). We are attempting to identify the minimal performance on the test, which indicates a road block that needs to be addressed prior to optimizing skill development within a group of individuals in a particular environment.

4. Build screens that are body-relative, reliable, time and space efficient; that can be performed with minimal technology but can be enhanced with technology.
   The tests within the screen should have historic and scientific relevance.

5. Pose no unnecessary risk with screens while providing safe failure opportunities.
   The screens allow manageable failure with equal or less risk than general physical exercise, activity or labor. The screens will connect you to your appropriate development strategy.

MOTOR CONTROL SCREEN

PURPOSE

The Motor Control Screen (MCS) determines whether an individual has the minimum level of motor control with body weight to allow maximal adaptability for human performance. Through research, the MCS adopts the science and validity of the Y Balance Test to effectively and efficiently screen basic motor control. The Y Balance Test was developed over a decade ago to comprehensively test a person's motor control. The Y Balance Test sections the body into quarters and thoroughly tests the persons motor control at the limit of stability. When a person is at their limit of stability, dysfunction is magnified. A full Y Balance Test is necessary for return to sport or discharge testing in rehabilitation or if a comprehensive test of motor control is needed.

Based on our research, we can use the anterior reach of the Y Balance Test Lower quarter and the Superolateral reach of the Y Balance Test Upper Quarter.

Our practical definition of motor control is *necessary input, sufficiently processed, with an acceptable output.*

The MCS gives you vital information on how you stabilize, balance and control your movement. This is an important link between the FMS and an individual's fitness/capacity activities. We designed the Motor Control Screen to deliver a tight feedback loop that not only measures dysfunction in the lower and upper body but sets a baseline to measure actionable changes in motor control quickly and reliably.

The results of these quick reaches will be compared to the norms for that individual's environment (sport/activity/occupation), group (individuals in the same environment), role (specific subgroup of the group) and age (when appropriate). This will ensure minimal competency and identify motor control capacity is not a restriction.

WHAT'S INVOLVED?

1. Ankle Clearing
2. Lower Body MCS
3. Upper Body Clearing
4. Upper Body MCS

CLEARING EXAMS AND PAIN

Pain alters motor control. The lower body and upper body clearing exams help identify painful movements which may affect the overall MCS scoring. If pain is present during a clearing test, the individual being tested should be referred to a healthcare professional for further assessment.

Ankle Clearing Screen

OBJECTIVE

The purpose of this test is to identify pain and to ensure ankle mobility is not a barrier to movement pattern competency and capacity. The lower body motor control screen may be adversely affected when ankle mobility is painful and/or dysfunctional/limited. Adequate mobility without pain is a prerequisite for normal motor control.

SET-UP

While holding the dowel rod for balance, the individual will place their right foot along the left side of the kit, and place the left foot in front of the right foot in the heel-to-toe position. Line up the front edge of the medial malleolus of the left foot behind the 0 line of the Functional Movement Screen Kit with the inside of the left foot touching the kit. Adjust kit when necessary.

ACTION

The right ankle is the one being measured. The individual will drop straight down, bending the knees, taking the right knee as far as possible in front of the toes. The heel must remain down. You will repeat this test switching feet.

WHAT ARE WE LOOKING FOR?

Visualize a vertical line from the forward most part of the right knee to the floor. Determine if this vertical line crosses the front edge of the left medial malleolus. Ask the individual if they felt any pain in the ankle, and if so where? (Front of the ankle or back of the lower leg?).

If you are unsure if the heel stayed down during movement or if the knee cleared the front leg malleolus, repeat up to 3 times.

SCORING

Beyond - The individual's knee moves beyond the medial malleolus of the front leg while the heel stays down. This indicates the ankle has cleared mobility requirements.

Within - The individual's knee resides within the width of the medial malleolus of the front leg while the heel stays down. This indicates a potential ankle mobility limitation. Failure on the Ankle Clearing screen implies that ankle mobility should be addressed and cleared.

Behind - The individual's knee does reach the medial malleolus of the front leg while the heel stays down. This indicates a potential ankle mobility limitation. Failure on the Ankle Clearing screen implies that ankle mobility should be addressed and cleared.

Additional Considerations

Pain - If the individual experiences pain with this screen, do not complete the screen. Referral to a healthcare professional is appropriate.

Stretch - If the individual experiences a stretch and it does not resolve with soft tissue or stretching applications, further assessment by a health care professional is needed.

If they do not have pain and do not pass, then proceed with caution to the lower body MCS. However, ankle mobility is still the priority.

Ankle Clearing Verbal Instructions

The following is a script to use while administering Ankle Clearing. For consistency throughout all testing, this script should be used during each screen. The bold words represent what you should say to the participant.

- **Please let me know if there is any pain while performing any portion of the screen.**
- **Please lace or strap your shoes snugly.**
- **Place the outside of your right foot up next to the FMS test kit so that the outside foot is in contact with the kit.**
- **Place the left foot in front of the right foot so that you are in the heel to toe position with both feet touching each other and the FMS test kit, and use a dowel for balance.**
- **I will adjust the FMS kit so that the red start line is in front of the medial malleolus.**
- **While maintaining the heel-to-toe position drop straight down, bending the back knee and taking it as far as possible in front of your toes while keeping the heel down.**
- **Once you have reached your maximum distance, I will measure and ask you where you felt the stretch (Front, Back of Ankle, or no stretch).**
- **Do you understand the instructions?**

Have the participant perform the ankle clearing screen at least three times for consistent measurement.

TIPS FOR TESTING

- The back foot is the ankle being tested.
- Adjust the FMS kit so that the red start line lines up with the front of the medial malleolus.
- Both feet must remain in the heel-to-toe position throughout the movement.
- If there is pain, refer to a healthcare professional and do not complete the Lower Body MCS.
- If the individual does not pass the ankle clearing and there is no pain involved, it is recommended to proceed to the Lower Body MCS to create a movement baseline. This allows you to compare the movement before and after correctives have been applied and when ankle mobility has been cleared.

Scoring Ankle Clearing

BEHIND

- Individual's knee resides behind the medial malleolus.

WITHIN

- Individual's knee resides within the medial malleolus.

BEYOND

- Individual's knee moves beyond the medial malleolus.

QUESTIONS

- Did you feel any pain? If so where?
- Did you feel a stretch? If so where? (Front, Back of Ankle, or no stretch).

It is possible to fail this screen due to the presence of pain or the lack of range of motion.

Ankle Clearing Score Sheet

INITIAL TESTING

ANKLE CLEARING	FINAL LEFT	FINAL RIGHT
Ankle Clearing (Beyond/Within/Behind Malleolus)		
Pain Y/N		
Where is it felt?		

RE-TESTING

ANKLE CLEARING	FINAL LEFT	FINAL RIGHT
Ankle Clearing (Beyond/Within/Behind Malleolus)		
Pain Y/N		
Where is it felt?		

ANKLE CLEARING	FINAL LEFT	FINAL RIGHT
Ankle Clearing (Beyond/Within/Behind Malleolus)		
Pain Y/N		
Where is it felt?		

Ankle Clearing Interpretation

ANKLE CLEARING	FINAL LEFT	FINAL RIGHT
Ankle Clearing (Beyond/Within/Behind Malleolus)	Beyond	Beyond
Pain Y/N	No	No
Where is it felt?	None	None

Lower Body MCS

OBJECTIVE

The Lower Body MCS can identify balance deficits and asymmetries in motor control.

SET-UP

The individual will stand with their right foot on the FMS kit - the most distal aspect of their shoe just behind the red starting line and the inside of their right foot aligned along the edge of the kit.

Starting Foot Position

ACTION

While maintaining a single-limb stance on their right leg, have the individual reach with their left limb in the forward direction. They will slide the box with their toes as far as they can, without touching left foot to floor, and then return to the starting position. Note that the right heel may NOT come up during the test.

This specific screening order is:

- Right Forward Reach - 3 trials minimum
- Left Forward Reach - 3 trials minimum

WHAT ARE WE LOOKING FOR?

The individual must perform a minimum of 3 successful repetitions, continuing until the next reach does not improve the final score. For example, you have 5 repetitions - the first is unsuccessful, second 58 cm, third unsuccessful, fourth 68 cm, fifth is 63 cm. The final score would be 68 cm. If the fifth attempt was greater than the fourth, then additional attempts are required until you see a decline. Once the max distance is achieved you would repeat on the opposite side.

Lower Body MCS

HOW TO MEASURE

The reach distance is measured by using the measure on the FMS Kit. Document the number, to the nearest half-inch or centimeter (depending on your device), of where the slide box has reached the farthest point the person can push it out, or the farthest point the most distal part of their foot reached.

Additionally, a measurement of the individual's foot length needs to be documented. This can be done by placing the heel of the right foot on the 0 line on the FMS Kit and measuring the distance from the heel to the most distal part of the shoe. Record the measurement to the nearest half-inch or centimeter, depending on the FMS Kit.

SCORING

Pass - Reach is greater than 2 foot lengths and above the environment specific minimum threshold (based on age, gender, sport/activity); less than a 1.5 inch or 4cm right/left asymmetry.

Fail - Reach is less than or equal to 2 foot lengths or below the environment specific minimum threshold (based on age, gender, sport/activity); greater than or equal to a 1.5 inch or 4cm right/left asymmetry.

SAFETY CONSIDERATIONS

- Can the individual stand on 1 leg for 10 seconds?
- Can the individual safely ascend/descend stairs?
- Does the individual have current/previous lower extremity joint instability or cartilage tears?
- Has the individual undergone any surgeries in the lower extremity?

Lower Body MCS

VERBAL SAFETY INSTRUCTIONS

The following is a script to use while administering the Lower Body Motor Control Screen. For consistency throughout all testing, this script should be used during each screen. The bold words represent what you should say to the participant.

- **Before we start, I would like to ask you a few safety questions.**
- **Do you have trouble safely ascending/descending stairs?**
- **Do you have current/previous lower extremity joint instability or cartilage tears?**
- **Have you undergone any surgeries in the lower extremity?**
- **When ready can you please attempt to balance on 1 leg for 10 seconds?**
- **I'll now check the other leg.**

VERBAL INSTRUCTIONS

The following is a script to use while administering the Lower Body Motor Control Screen. For consistency throughout all testing, this script should be used during each screen. The bold words represent what you should say to the participant.

- **Please let me know if there is any pain while performing any portion of the screen.**
- **Please lace or strap your shoes snugly.**
- **Place the inside of your right foot on the FMS kit with your toes just behind the starting line with the inside of your foot lined up next to the edge of the kit.**
- **While maintaining the foot on the platform, I want to see how well you can maintain balance while pushing the slide box with the opposite foot.**
- **The reach foot must maintain contact with the slide box on the target area while it is in motion (i.e. cannot kick the slide box).**
- **Do not use the slide box for stance support (i.e. place foot on top of slide box).**
- **Return the reach foot to the starting position under control (i.e. return the reach foot to the floor behind the red starting line, next to the stance platform).**
- **Do you understand the instructions?**

TIPS FOR TESTING

- Ensure the heel of the stance leg stays in contact with the board during the repetition. The heel coming up will almost always be the limiting factor.
- Maintain contact with the slidebox during reach and don't kick it forward.
- Do not use the slidebox for stance or support.
- Return to starting position under control, not allowing foot to touch the ground.
- Do not coach the movement; simply repeat the instructions if needed.

Lower Body MCS Score Sheet

INITIAL TESTING

DIRECTION	TARGET 2XFL	MAX LEFT	MAX RIGHT	SYMMETRY	PASS or FAIL
Forward Reach					
Foot Length					

RE-TESTING

DIRECTION	MAX LEFT	MAX RIGHT	SYMMETRY	PASS or FAIL
Forward Reach				

DIRECTION	MAX LEFT	MAX RIGHT	SYMMETRY	PASS or FAIL
Forward Reach				

Lower Body MCS Interpretation

DIRECTION	TARGET >2 X FL	MAX LEFT	MAX RIGHT	SYMMETRY	PASS or FAIL
Forward Reach	**>60 cm**	**68**	**63**	**5**	**FAIL**
Foot Length	**30 cm**				

To be considered functional, we expect less than a 1.5 inch or 4cm right/left asymmetry. (≥1.5 inch or 4cm = Fail)

The person should also be able to reach greater than 2 times foot length and above the environment specific minimum threshold (based on age, gender, sport/activity).

EXAMPLE:

The foot Length for this test is considered 30 cm.

- Target = 30 cm x 2 = > 60 cm
- Greatest Left = 68 cm - Pass
- Greatest Right= 63 cm - Pass
- Asymmetry = 5 cm - Fail

Determining Foot-Length

FOOT-LENGTH (IN)	2 X FL
5	10
5.5	11
6	12
6.5	13
7	14
8	16
8.5	17
9	18
9.5	19
10	19
10.5	21
11	22
11.5	23
12	24
12.5	25
13	26
13.5	27
14	28
14.5	29
15	30
15.5	31
16	32
16.5	33
17	34
17.5	35
18	36

FOOT-LENGTH (CM)	2 X FL
12	24
13	26
14	28
15	30
16	32
17	34
18	36
19	38
20	40
21	42
22	44
23	46
24	48
25	50
26	52
27	54
28	56
29	58
30	60
31	62
32	64
33	66
34	68

FOOT-LENGTH (CM)	2 X FL
38	76
39	78
40	80
41	82
42	84
43	86
44	88
45	90
46	92

Upper Body Clearing

OBJECTIVE

The purpose of the wrist extension and horizontal adduction clearing tests is to identify pain and appropriate range of motion of the upper extremity to ensure it is not a barrier to movement pattern competency and capacity. The upper body motor control screen is adversely affected when either wrist extension or horizontal adduction is considered painful and/or dysfunctional/limited. Normal adequate mobility without pain is a prerequisite for motor control.

If pain is present with either test, do not proceed with upper body MCS - refer the individual to a healthcare professional for further assessment.

WRIST EXTENSION CLEARING

SET-UP

Start by having the person place the palms of their hands together at the center of their chest, fingers pointing upwards.

ACTION

The person will slowly lift their elbows, trying to get their forearms parallel to the ground, while keeping their palms together. Stop the movement as soon as the palms start to separate.

WHAT ARE WE LOOKING FOR?

Place a dowel parallel to the floor against their forearms. To pass the clearing exam there should be no pain and no greater than one hand width distance between the dowel and the base of the hands.

SCORING

To pass the wrist extension clearing exam, they must meet two criteria:

- No pain
- No greater than one hand width distance between the dowel and the base of the hands

It is possible to fail this exam due to presence of pain and/or the lack of range of motion.

HORIZONTAL ADDUCTION CLEARING

SET-UP

Start by having the person bring their right arm to 90 degrees of shoulder flexion, placing their left hand on right forearm.

ACTION

The person will use their left hand to pull their right arm across their chest into horizontal adduction. Repeat this test switching arm position.

SCORING

This test is considered positive if the person reports pain.

This test does not have a range of motion component. It is only performed for provocation of pain.

If they do not have pain with both clearing tests, but do not pass wrist extension, proceed with caution to the upper body MCS. However, wrist mobility is still the priority.

WRIST EXTENSION VERBAL INSTRUCTIONS

The following is a script to use while administering Wrist Extension Clearing. For consistency throughout all testing, this script should be used during each screen. The bold words represent what you should say to the participant.

- **Please let me know if there is any pain while performing any portion of the test.**
- **Place the palms of your hands together above your chest and slowly lower your hands keeping your palms together.**
- **Stop the movement as soon as the palms start to separate.**
- **I will then place a dowel parallel to the floor.**
- **Do you understand the instructions?**

HORIZONTAL ADDUCTION CLEARING VERBAL INSTRUCTIONS

The following is a script to use while administering Horizontal Adduction Clearing. For consistency throughout all testing, this script should be used during each screen. The bold words represent what you should say to the participant.

- **Please let me know if there is any pain while performing any portion of the screen.**
- **Raise your right arm so it is level with your chest.**
- **From there use your left hand to pull your right arm across your chest.**
- **Do you understand the instructions?**

Upper Body MCS

OBJECTIVE

The Upper Body MCS can identify balance deficits and asymmetries in motor control.

SET-UP

The individual will begin in the quadruped position, placing their right thumb parallel with the red 0 line on the FMS Kit. The little finger should be in-line with the white line on the slide box (slide box starting near support hand). The midline of their body should be in line with the gray section on the top of the slide box. Get into the push-up position with feet shoulder width apart. Shoes are on for this screen.

Hand Position

Body Position

ACTION

When the individual is ready, they will slide the box with the left hand as far as possible in the horizontal reach. The elbow may bend during this test, but the individual must return without falling. Read the reach distance while the individual rests. The person will return to the start position to perform the next trial.

The specific screening order is:

- Right horizontal reach (minimum of three trials)
- Left horizontal reach (minimum of three trials)

WHAT ARE WE LOOKING FOR?

The individual must perform a minimum of 3 successful repetitions, continuing until the next reach does not improve the final score. For example, you have 5 repetitions the first is unsuccessful, second 58 cm, third unsuccessful, fourth 68 cm, fifth is 63 cm. The final score would be 68 cm. If the fifth attempt was greater than the fourth, then additional attempts are required until you see a decline. Once the max distance is achieved you would repeat on the opposite side.

Upper Body MCS

HOW TO MEASURE

The reach distance is measured by using the measure on the FMS Kit and is named by the stance arm. (This simply represents the pattern and does not imply the functional ability of a body part or side.) Document the number, to the nearest half-inch or centimeter (depending on your device), of where the slide box has reached the farthest point the most distal part of their hand reached.

Additionally, a measurement of the individual's foot length needs to be documented. This can be done by placing the heel of the right foot on the 0 line on the FMS Kit and measuring the distance from the heel to the most distal part of the shoe. Record the measurement to the nearest half-inch or centimeter, depending on the FMS Kit.

SCORING

Pass - Reach is greater than 2 foot length and above the environment specific minimum threshold (based on age, gender, sport/activity); less than a 1.5 inch or 4cm right/left asymmetry.

Fail - Reach is less than or equal to 2 foot lengths or below the environment specific minimum threshold (based on age, gender, sport/activity); greater than or equal to a 1.5 inch or 4cm right/left asymmetry.

SAFETY CONSIDERATIONS

- Is it safe for the individual to perform push-ups?
- Does the individual have current/previous shoulder instability or surgical history?
- Did the individual score a 1 or 0 on the FMS Shoulder Mobility, Trunk Stability Push-Up and/or the Rotary Stability Tests?
- Is the individual's Beighton criteria greater than or equal to 5/9?

Upper Body MCS

VERBAL SAFETY INSTRUCTIONS

The following is a script to use while administering the Upper Body Motor Control Screen. For consistency throughout all testing, this script should be used during each screen. The bold words represent what you should say to the participant.

- **Before we start I would like to ask you a few safety questions.**
- **Do you have any pain or trouble performing push-ups?**
- **Do you have current shoulder instability or surgical history that may stop you from performing this test?**

VERBAL INSTRUCTIONS

The following is a script to use while administering the Upper Body Motor Control Screen. For consistency throughout all testing, this script should be used during each screen. The bold words represent what you should say to the participant.

- **Please let me know if there is any pain while performing any portion of the screen.**
- **Please lace or strap your shoes snugly.**
- **Start on your hands and knees and place the right thumb parallel with the start line with the little finger in line with the white line on the slide box.**
- **Line up the mid-line of the body with the gray section of the slide box.**
- **When ready get into the push-up position feet shoulder width apart and while maintaining the right hand on the platform, push the slide box in the red target.**
- **The reach hand must maintain contact with the slide box (i.e. cannot shove the slide box).**
- **Do not use the slide box for stance support (i.e. don't place hand on top of slide box).**
- **You may bend the elbow, but must return the reach hand to the starting position under control.**
- **You will perform a minimum of 3 successful repetitions, continuing until the next reach does not improve the final score.**
- **Once the max distance is achieved you would repeat on the opposite side.**
- **Do you understand the instructions?**

TIPS FOR TESTING

- The arm that is being measured is the stance arm. This simply represents the pattern and does not imply the functional ability of a body part or side.
- Use the dowel rod as a visual marker to line the mid-line of the body with the gray section of the slide box.
- Performing two practice trials off the kit or on another kit can speed the testing process but is not required.
- Person must maintain unilateral stance on the platform.
- Person must maintain reach hand contact with the slide box on the target area while it is motion (i.e. cannot shove the slide box).
- Person cannot use the slide box for stance support (i.e. place hand on top of slide box).
- Person may bend the elbow but feet must remain in staring position (in contact with ground).
- Person must return the reach hand to the starting position under control.

Upper Body MCS Score Sheet

INITIAL TESTING

CLEARING TESTS	LEFT	RIGHT	PASS/FAIL
Wrist Extension Clearing -/+			
Horizontal Adduction Clearing -/+			

DIRECTION	TARGET 2XFL	MAX LEFT	MAX RIGHT	SYMMETRY	PASS/FAIL
Horizontal Reach					

RE-TESTING

DIRECTION	MAX LEFT	MAX RIGHT	SYMMETRY	PASS/FAIL
Horizontal Reach				

DIRECTION	MAX LEFT	MAX RIGHT	SYMMETRY	PASS/FAIL
Horizontal Reach				

Upper Body MCS Interpretation

Clearing Tests	LEFT	RIGHT	PASS/FAIL		
Wrist Extension Clearing -/+	-	-	PASS		
Horizontal Adduction Clearing -/+	-	-	PASS		
DIRECTION	TARGET >2XFL	GREATEST RIGHT	GREATEST LEFT	ASYMMETRY	ASYMMETRY
Horizontal Reach	>60 cm	68	63	5	FAIL
Foot Length	30 cm				

To be considered functional, we expect less than a 1.5 inch or 4cm right/left asymmetry. (≥1.5 inch or 4cm = Fail)

The person should also be able to reach greater than 2 times foot length and above the environment specific minimum threshold (based on age, gender, sport/activity).

EXAMPLE:

Foot Length = 30 cm
Target = 30 cm x 2= >60 cm
Greatest Left= 68 cm - Pass
Greatest Right= 63 cm - Pass
Asymmetry = 5 cm - Fail

CARRY SCREEN

PURPOSE

The Carry Screen determines whether an individual is able to maintain alignment with integrity under load to allow maximal adaptability.

Think about this - if one component of your car must fail, we would hope that your engine would fail before your brakes.

With your body, we would hope that your prime movers would fail before your postural stabilizers because using your prime movers without postural stabilizers creates poor alignment, poor proprioception and poor stability. It affects motor control and compromises proprioception.

Yet, when we train our lifts more than our carries, when we train our patterns more than our postures, we forget this vital fact: postural stabilizer endurance should far surpass the prime mover endurance. The ability to maintain integrity under load is more important than the ability to lift load, and it is fundamental for proper movement of load. Carries train the brakes—your control, whereas lifts train your engine—your power.

WHAT'S INVOLVED?

1. Carry Screen

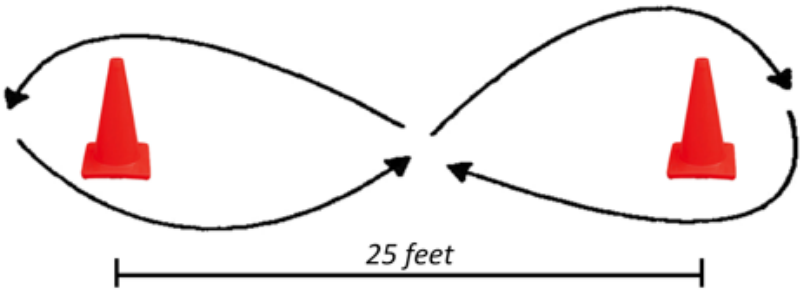
Carry Screen

OBJECTIVE

Carrying is a fundamental activity for human beings. A body-relative heavy carry stresses posture, balance and alignment, but also requires a minimum level of quality or integrity. The failure point on a loaded carry screen has an extremely close relationship with test failure due to loss of integrity. It provides a self-limiting test, with a workload focused more on stabilization than strength.

SET-UP

The tester will use two cones to mark 25 feet distance.



Next, the tester will determine 50% and 75% of the individual's bodyweight. These will be the testing weights for the carry screen. Once ready, the individual will pick up the weight with a tall, upright posture, holding the weight at their sides, with their arms straight.

Proper Start Posture

Proper Start Posture

Poor Posture

ACTION

While maintaining proper posture with weights by their sides, the individual will walk comfortably in a figure 8 pattern around the two cones. They should maintain a steady pace. Once the weights are gripped and test begins, the individual cannot alter their grip.

There will be two rounds to the carry screen. During the first round, the individual will carry 50% of their bodyweight only 50 feet, or one lap. This is to determine safety for the screen. The second round - the actual screen - the individual will carry 75% of their bodyweight until they feel they need to release the weights, their gait becomes unstable, and/or they need to adjust their grip on the weights.

WHAT ARE WE LOOKING FOR?

The individual will perform Figure 8 laps around the two cones until they feel they need to put the weights down, their gait becomes unstable, and/or they need to adjust their grip on the weights. They may set the weight down anywhere during the carry test - it does not need to be at a cone. The tester will keep track of the distance completed as well as the amount of time needed to complete the carry screen.

HOW TO MEASURE

Once the individual picks up the 75% of their bodyweight and begins walking, start the timer. Each Figure 8 around the cones is 50 feet. The screen is over when the individual releases the weights, loses proper posture, and/or needs to adjust their initial grip on the weights. Document the total time and the distance the individual completed.

SCORING

Pass - Carry time is greater than 90 seconds with 75% of body weight while maintaining postural integrity.

Fail - Carry time is less than 90 seconds with 75% of body weight and/or does not maintain postural integrity.

To further identify deficiencies within the individual's carry, we can calculate their carry load. The following equation can be used:

Carry Load = (Weight Carried X Distance X Time)/Body Weight

*Stride Factor equals .415 for men and .413 for women

Carry Load specifically compares an individual to their environment (age, sex, sport, position, etc).

*Internal research has guided the conclusion that the time between safely placing the weights down versus dropping the weight at total failure is not significantly relevant and will not affect your score.

SAFETY CONSIDERATIONS

- Does the individual have current/previous shoulder instability or surgical history?
- Does the individual have current/previous spinal injuries or surgical history?
- Does the individual have any recent back pain?
- Have they safely carried 75% of their body weight recently?
- Did the individual score a 1 or 0 on the FMS Shoulder Mobility, Trunk Stability Push-Up, and/or Rotary Stability Tests?

Carry Screen

VERBAL SAFETY INSTRUCTIONS

The following is a script to use while administering the Carry Screen. For consistency throughout all testing, this script should be used during each screen. The bold words represent what you should say to the participant.

- **Before we start I would like to ask you a few safety questions.**
- **Do you have current/previous shoulder instability or surgical history?**
- **Do you have current/previous spinal injuries or surgical history?**
- **Do you have any recent back pain?**
- **What is the maximum weight you have lifted off the ground or dumbbell rack in the past 6 months?**
- **Do you perform deadlifts, dumbbell curls or clean/shrugs?**
- **If non-athlete: How much weight do you normally lift or carry? For example, for work do you lift heavy materials, boxes, suitcases, children?**

VERBAL INSTRUCTIONS

The following is a script to use while administering the Carry Screen. For consistency throughout all testing, this script should be used during each screen. The bold words represent what you should say to the participant.

- **This screen is a carry test. There will be two rounds, performed at 50% of your bodyweight for a total of 50 feet and 75% of your bodyweight for as long as you can maintain upright posture and grip on the weight.**
- **You'll pick up the weight with a tall, upright posture keeping your ears over your shoulders and shoulders over your hips. Hold the weight with arms straight and at your sides and walk at a steady pace in a figure 8 pattern around the two cones.**

The screen is terminated when:

- **You are unable to maintain proper posture (upright and looking forward).**
- **You drop or put down one or both weights.**
- **Your gait becomes unstable (bags hitting knees, crossing feet).**
- **Any change of grip that deviates from starting position (ex - hook grip).**
- **When you feel that one or both weights are about to fall, set them down gently using a squatting motion.**
- **For safety reasons, place the weights down in a controlled manner once you can no longer continue.**
- **At this time, please remove any jewelry or adornments from your hands or wrists.**
- **Do you have any questions? Are you ready?**
- **Pick up the weight, and I'll start the time when you cross the line.**

TIPS FOR TESTING

- The individual must maintain spinal alignment throughout the test.
- The individual must walk at a constant steady pace.
- As soon as they are unable to maintain proper grip the person should be instructed to lower the weight down safely.
- The individual may place the weight down anywhere during the carry test, they don't need to make it back to the cone.
- Another loss of posture that we frequently see is that the bags will start hitting the individuals legs like a pendulum. If this happens, stop the test.

Determining Carry Weight

Use the charts below to assist in calculation of 50% and 75% of body weight (BW). You may round the weight to the nearest 5 pounds but be sure to record the weight as it is used in the interpretation of the carry screen.

BODYWEIGHT (LBS)	50% BW	25% (EACH HAND)	75% BW	37.5% (EACH HAND)
75	37.5	18	56	28
80	40	20	60	30
85	42.5	21	63	31
90	45	22	67	33
95	47.5	23	71	35
100	50	25	75	37
105	52.5	26	78	39
110	55	27	82	41
115	57.5	28	86	43
120	60	30	90	45
125	62.5	31	93	46
130	65	32	97	48
135	67.5	33	101	50
140	70	35	105	52
145	72.5	36	108	54
150	75	37	112	56
155	77.5	38	116	58
160	80	40	120	60
165	82.5	41	120	61
170	85	42	127	63
175	87.5	43	131	65
180	90	45	135	67
185	92.5	46	138	69
190	95	47	142	71
195	97.5	48	146	73
200	100	50	150	75
205	102.5	51	153	76
210	105	52	157	78

BODYWEIGHT (LBS)	50% BW	25% (EACH HAND)	75% BW	37.5% (EACH HAND)
215	107.5	53	161	80
220	110	55	165	82
225	112.5	56	168	84
230	115	57	172	86
235	117.5	58	176	88
240	120	60	180	90
245	122.5	61	183	91
250	125	62	187	93
255	127.5	63	191	95
260	130	65	195	97
265	132.5	66	198	99
270	135	67	202	101
275	137.5	68	206	103
280	140	70	210	105
285	142.5	71	213	106
290	145	72	217	108
295	147.5	73	221	110
300	150	75	225	112
305	152.5	76	228	114
310	155	77	232	116
315	157.5	78	236	118
320	160	80	240	120
325	162.5	81	243	121
330	165	82	247	123
335	167.5	83	251	125
340	170	85	255	127
345	172.5	86	258	129
350	175	87	262	131

Carry Screen Score Sheet

INITIAL TESTING

BODY WEIGHT	HEIGHT	WEIGHT CARRIED	DISTANCE (FT)	TIME (SEC)	CARRY LOAD	CARRY EFFICIENCY

RE-TESTING

BODY WEIGHT	HEIGHT	WEIGHT CARRIED	DISTANCE (FT)	TIME (SEC)	CARRY LOAD	CARRY EFFICIENCY

BODY WEIGHT	HEIGHT	WEIGHT CARRIED	DISTANCE (FT)	TIME (SEC)	CARRY LOAD	CARRY EFFICIENCY

Carry Screen Interpretation

BODY WEIGHT (lb)	HEIGHT (in)	WEIGHT CARRIED	DISTANCE (FT)	TIME (SEC)	CARRY LOAD	CARRY EFFICIENCY
180	72	135	280	85	16,575	123%

This example assumes a male with a stride factor of .415.

For general function, we expect a minimum carry distance > 250 feet for >90 seconds with 75% body weight while maintaining postural integrity.

Calculation of Carry Load:

(Weight Carried x Distance x Time)/Body Weight

(135 X 280 X 85) / 180

Carry Load specifically compares an individual to their environment (age, sex, sport, position, etc).

With these numbers, we can look at deficiencies within your carry.

PROXY TESTS

PURPOSE

A **Proxy Screen** fulfills a component of the purpose and principles of the testing domain and can serve as an alternative if there is any question about safe execution of the primary screen. It can also be used when the primary screen cannot be performed readily or is unsafe to do so. A proxy screen can also be used as a pre-screen for prudent consideration before the primary screen.

WHAT'S INVOLVED?

- Grip Strength
- Flexed and Extended Arm Hang

Grip Strength Test

OBJECTIVE

Grip strength can give a snapshot of an individual's upper quarter integrity. Frequently, unstable or painful shoulders will cause weak grip in order to protect the shoulder, particularly in the overhead position. Literature review shows that overhead grip strength should be stronger than that at side with elbow bent. Most grip strength normative data is with elbow bent.

SET-UP

The dynamometer should be set to the 2 position. The individual will stand holding the dynamometer. They will complete 3 trials in the following position:

Position 1

Shoulder - adducted with neutral rotation,
no shoulder flexion
elbow - flexed to 90 degrees
wrist/forearm - neutral

Position 2

Shoulder - fully flexed overhead (170-180 degrees) with neutral rotation
elbow - extended
wrist/forearm - neutral

Standing has been found to result in higher grip strengths than when sitting when using the same instrument (Balogun, et al 1991, Amosun et al 1995). Differences of up to 2lb/in have been reported (Fraser & Benten, 1983). This is equivalent to about 2% increase in strength scores.

ACTION

In each position, the individual will squeeze the dynamometer as hard as possible. They will complete 3 trials in each position with both arms - alternating between a trial on the right and one on the left. The individual should rest between each attempt for optimal recovery (at least 30 seconds). Reset the dynamometer after each attempt.

HOW TO MEASURE

In each position, the individual will complete the task three times. All three dynamometer readings will be documented in kilograms. Make sure to reset the dynamometer for each attempt.

SCORING

The greatest number in kilograms for each position is the individual's score. The greatest scores will be averaged together using the following equation:

(Greatest Elbow Flexed + Greatest Overhead)/2 = Average

You will complete on the right and the left and then compare the individual's average strength in standing to the normative values table.

If there is a greater than 1 standard deviation difference from normative values, the carry screen would be deemed inappropriate for the individual.

If the overhead grip test results are not 10% greater than the results of elbow flexed grip test, the carry screen may also be deemed inappropriate for the individual.

Special note: Grips strength has been found to be greater with the shoulder flexed to 180 degrees versus the standard arm position, when usinng the same testing instrument. (Su et al, 1994.)

SAFETY CONSIDERATIONS

- Does the individual currently have any hand or shoulder pain/injury?

Grip Strength Testing

VERBAL INSTRUCTIONS

The following is a script to use while administering Grip Strength. For consistency throughout all testing, this script should be used during each screen. The bold words represent what you should say to the participant.

- **Set the dynamo-meter to the 2 position.**
- **Perform a series of squeezes on the dynamo-meter to test grip strength.**
- **From a standing position perform 3 repetitions with shoulder in neutral and elbow flexed to 90 degrees. Alternate testing on right and left hands.**
- **Perform 3 repetitions with arm overhead and elbow elbow straight. Alternate testing on right and left hands.**
- **Record strength in kilograms and reset the dynamo-meter after each repetition.**

TIPS FOR TESTING

- Exercise induced muscle fatigue can lower your grip strength results therefore perform grip testing prior to training or performing the carry screen.
- Test both sides allowing rest in between reps to allow for recovery.
- Determine the average strength (in kilograms) with the shoulder in neutral and elbow flexed to 90 degrees and compare to normative data.
- Normative data is available for this position with the subject sitting.

Normative Data - Grip Strength

Age	Sex	Mean (kg)	SD (kg)	Cut Point (kg)
6 to 7	M	14	2	12
	F	13	2	11
8 to 9	M	18	4	15
	F	15	3	12
10 to 11	M	23	5	19
	F	22	3	18
12 to 13	M	26	7	19
	F	24	5	19
14 to 15	M	32	7	25
	F	24	6	19
16 to 17	M	39	9	30
	F	28	7	21
18 to 19	M	46	12	34
	F	30	6	25
20 to 24	M	51	10	42
	F	30	6	24
25 to 30	M	53	9	44
	F	31	6	25
30 to 34	M	53	10	43
	F	33	8	25
35 to 39	M	53	10	42
	F	32	5	27
40 to 44	M	52	9	43
	F	30	6	24
45 to 49	M	48	10	37
	F	27	6	21
50 to 54	M	48	8	41
	F	28	5	23
55 to 59	M	42	11	30
	F	24	6	18
60 to 64	M	38	9	29
	F	23	5	18

Grip Testing Score Sheet

POSITION				
	Flexed	Overhead	Flexed	Overhead
Trial 1 (kg)				
Trial 2 (kg)				
Trial 3 (kg)				
Greatest				
Average				

NOTES:

Grip Testing Interpretation

POSITION				
	Flexed	Overhead	Flexed	Overhead
Trial 1 (kg)	46	46	46	38
Trial 2 (kg)	48	46	44	47
Trial 3 (kg)	42	49	46	45
Greatest	48	49	46	47
Average	48.5		46.5	

Compare the average strength (in kilograms) in standing to normative values table.
Normative values table has been adjusted for the 2% strength increase when individual is standing versus sitting.

- If strength in this position is greater than 1 standard deviation less than normative values, then carry screen would be deemed inappropriate for the person.
- If strength in this position is equivalent compared to norms, but grip strength with arm overhead is not 10% greater than with elbow flexed to 90 degrees, carry screen may also be deemed inappropriate for the person.
- Shoulder flexion at 180 degrees has been found to result in greater grip strength on the same instrument than when in the standard position (Su et al, 1994).

If the person scores below any of the cut points for either side or position, our data indicates the following:

1. First, the person will likely not pass the carry screen
2. Second, you can infer that the person has a postural control dysfunction
3. And lastly, the carry screen would be deemed inappropriate for the individual at this time.

Average Calculation:

(Greatest Elbow Flexed + Greatest Overhead)/2 = Average

Example:

(48+49)/ 2 = 48.5

ARM HANGS - FLEXED AND EXTENDED

OJECTIVE

Flexed and extended arm hang gives a snapshot of the person's ability to maintain postural integrity in non-weight bearing position for the lower extremities. It can be considered a lower intensity alternative for those with high-risk injury profiles or little history with weight lifting since the person does not have to lift weight off the ground and can easily release or not even start the test if discomfort or instability is present.

SET-UP

Both the extended and flexed arm hand using an overhand grasp (palms facing away from body).

For the extended arm hang the person grasps the bar with the elbows straight and the time is started when the feet are no longer supported (by ground or box used to reach bar).

In the flexed-arm hang, the time is started when the person is in position with chin above the bar (elbows bent position). Chest should be held close to bar with legs hanging straight.

WHAT ARE WE LOOKING FOR?

The individual should hold these hang positions for as long as possible.

SAFETY CONSIDERATIONS

- Does the individual currently have any hand or shoulder issues?
- Does the individual have a history of shoulder surgery?

Flexed & Extended Arm Hang

VERBAL INSTRUCTIONS

The following is a script to use while administering the Flexed & Extended Arm Hang. For consistency throughout all testing, this script should be used during each screen. The bold words represent what you should say to the participant.

Extended Arm Hang

- When you are ready, grasp the bar with the elbows straight.
- The timer is started when the feet are no longer supported (by ground or box used to reach bar).
- Hang as long as possible. The timer stops when you return to the ground.

Flexed Arm Hang

- When you are ready, grasp the bar.
- In the flexed-arm hang, the time is started when your chin is above the bar (elbows bent position).
- Hold your chin above the bar for as long as possible.
- Your chest should be held close to bar with legs hanging straight. Timing is stopped when person's chin touches or falls below the bar.

Both the extended and flexed arm hangs use an overhand grasp (palms facing away from body).

TIPS FOR TESTING

- Make sure feet are straight and individual feels comfortable hanging.
- Make sure the individual holds their chin above the bar for the flexed arm hang test.
- Timer starts as soon as they start to hang and ends when they return to the ground

Scoring Arm Hangs

ARM HANGS	TIME (sec)
Extended	
Flexed	

The benchmarks for these are at least 60 seconds for the Extended Arm Hang and at least 20 seconds for the Flexed Arm Hang.

And just like with Grip Strength, if they do not meet both of these marks, our data indicates the person will likely not pass the carry screen and you can infer that the person has a postural control dysfunction.

Also, if both time requirements are not met, we consider the Carry Test to be inappropriate for the individual at this time

Bottoms Up Kettlebell Test

Bottoms Up Kettlebell

Start by holding the KB bottoms up at shoulder height with the elbow tucked into ribs (racked position). While holding the weight in this position, take two steps forward and two steps backwards. If unable to maintain the KB bottoms up, reduce the KB weight and try again until it can be completed.

After the KB bottoms up hold can be completed, use the same weight to complete a deep squat. For the KB bottoms up deep squat, squat and return to position without losing control of the KB. If unable to maintain the KB position with squatting, reduce the weight and try again until it can be completed.

The final task is to press the KB overhead while maintaining a bottoms up position. Press the bottoms up KB overhead and return to the racked position without losing control of the KB. If unable to complete this motion, reduce the weight and try again until it can be completed.

Each task should be completed while maintaining a bottoms up KB position without exaggerated effort. Only move to the next task if successfully completing the phase prior. If unable to complete a task, reduce the weight until successful. Complete on both right and left sides.

This test will determine the weight the individual should use for 6 position carry corrective.

Scoring Bottoms Up Kettlebell

BOTTOMS UP KB	LEFT WEIGHT	RIGHT WEIGHT
Squat		
Press		

POWER SCREEN

PURPOSE

The Power Screen will give us insight into an individual's explosive control - a fundamental expression of human motor control and work expressed within time constraints.

The acquisition of power is an essential component of our developmental process. We express power through jumping activities. Young children first develop this power by climbing up on objects and then jumping off. They will usually use a two-leg jumping strategy to jump off objects that are at slightly different elevations - this is an exploration of power and demonstration control over gravity. This power continues throughout the lifespan and is incorporated in almost all sporting and fitness activities. We will use a combination of jumping patterns to determine if the minimum element of power is present and dissect any potential linkage problems that can occur throughout the kinetic chain.

Whereas work is equal to *force x distance*, power is equal to *force x distance / time*. The fundamental expression of power is accomplished by the child's brain when they confront the forces of gravity. The feedback is consistent and constant because gravitational forces affect all bodies and objects equally. Any throw is an action on a body or object in opposition or modification to the vertical line of pull of gravity. Whether you throw yourself (a jump), a body part (a punch or kick) or an object (a ball) it is all considered a throw with gravity acting as the constant that provides feedback.

WHAT'S INVOLVED?

1. Broad Jump
2. Broad Jump Hands on Hips
3. Single Leg Jump

Broad Jump

OBJECTIVE

The Broad Jump Screen will determine if the individual has a minimum level of power with body weight to allow maximal adaptability. By testing maximum power, it allows us to measure lower body power with the aid of the upper body for momentum. We also perform this test with hands on hips.

Since researchers have found that broad jump with hands on hips is about 20% less than with arms, we expect an individual to jump 80% of their broad jump. The comparison of the two tests will give an idea of their fundamental ability to use the upper and lower extremities to generate power.

Remember, both the Functional Movement Screen and the Motor Control Screen should be performed prior to this screen.

SET-UP

The individual should begin standing behind the line. To ensure adequate understanding of the instructions and ensure safety with execution, have the individual perform the following warm-up procedure:

- Vertical Jump
- Jump out 1 foot length
- 50% effort broad jump
- 75% effort broad jump

Watch for good technique, safe landing position, and any pain.

ACTION

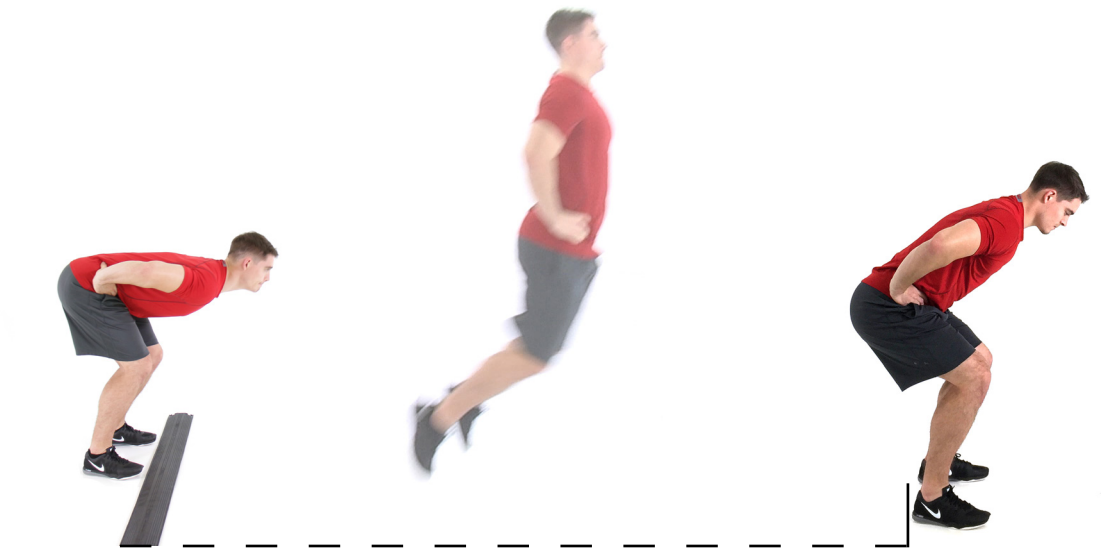
The broad jump will be performed with and without arm swing. Hands will be free during arm swing trials and hands placed on hips for the no arm swing trials. Repeat the warm-up procedure for both trials.

Broad Jump with Arms

Once standing behind the line with hands free, the individual will jump out under control as far as they can. They can catch themselves with their hands if they start to fall forward when they land. However, if the client falls backward or shuffles their feet when landing, that measurement will not be recorded and the jump will be redone.

Broad Jump Hands on Hips

Once standing behind the line with hands on hips, the individual will jump out under control as far as they can. They can move their hands from their hips once they have landed to catch themselves with their hands if they start to fall forward. However, if the individual falls backward, shuffles their feet when landing or removes hands from hips prior to landing, that measurement will not be recorded and the jump will be redone.



WHAT ARE WE LOOKING FOR?

The individual should jump as far as they can under control - landing balanced with both feet planted. They should perform 3 successful repetitions using their arms and 3 successful repetitions without their arms. Remember, perform the warm-up procedure prior to both arms and no arms!

HOW TO MEASURE

The jump distance is measured in centimeters from the start line to the heel of the closest foot to the start line.

SCORING

We will use the furthest recorded jump for both with arms and without arms.

For the Broad Jump Hands on Hips, we expect the individual to jump a distance greater than their height in centimeters. Additionally, consult the normative data for their age, gender, and sport/activity. We can use the following equation to calculate a ratio percentage of broad jump to height:

(Broad Jump/Height) X 110 = % of jump to height

This percentage should be greater than 110%.

For the Broad Jump Hands on Hips, we expect the individual to jump a distance equal to at least 80% of their broad jump, in another words, 20% less than their broad jump. This comparison will highlight an individual's fundamental ability to use the upper and lower extremities to generate power. We can use the following equation to calculate a ratio percentage of arms to no arms broad jump:

(With arms broad jump/board jump hands on hips) X 100 = % of arms to no arms

The target ratio percentage should be between 115-125%.

SAFETY CONSIDERATIONS

- Does the individual jump frequently?
- Does the individual have an injury, pathology, or instability which might be aggravated with jumping - such as a hip, knee, ankle instability or cartilage injury, or ACL/PCL/MCL/LCL tear?
- Does the individual have any current or previous issues that may be aggravated by jumping such as hip, knee, ankle instabilities or previous lower body surgeries?
- Did the individual score a 1 or 0 on any of the FMS tests? (pay particular attention to the Deep Squat!)
- Did the individual demonstrate valgus collapse - knee tracks inside of their feet - at any time during the test? If this cannot be corrected by verbal cueing, discontinue the test.

Broad Jump

VERBAL SAFETY INSTRUCTIONS

The following is a script to use while administering the Broad Jump. For consistency throughout all testing, this script should be used during each screen. The bold words represent what you should say to the participant.

- **Before we start I would like to ask you a few safety questions.**
- **Do you jump frequently?**
- **Do you have a current injury, pathology, instability that might be aggravated with testing? Such as hip, knee, ankle instability or ACL/PCL/MCL/LCL tears.**
- **Do you have any current or previous issues that may be aggravated by jumping such as hip, knee, ankle instabilities or previous lower body surgeries?**
- **Are there any reasons why you should not jump?**

VERBAL INSTRUCTIONS

The following is a script to use while administering the Broad Jump. For consistency throughout all testing, this script should be used during each screen. The bold words represent what you should say to the participant.

- **Start with your toes behind the start line with your feet a comfortable distance apart.**
- **First, practice jumping with a vertical jump, jump out a foot length, 50% effort, then 75% effort. For now, you can use arms however you want. Repeat once.**
- **Now try to jump out under control as far as you can. You can catch yourself with your hands if you start to fall when you land. However, if you fall backward when you land, that measurement will not be recorded and you will redo that trial.**
- **Measurements will be taken from the start line to the heel of the closest foot to the start line.**
- **Repeat two more times.**
- **We will now repeat the same procedure of practice jumps and maximum jumps, but you need to put both hands on your hips. You can move your hands from your hips once you land to catch yourself if needed.**

TIPS FOR TESTING

- View the jumps from the front to ensure no valgus collapse is occurs. At any time during testing if valgus collapse is observed, and cannot be corrected through verbal cueing, discontinue testing.
- Upon landing, the individual must maintain control - landing balanced with both feet planted.
- Upon landing, the individual may fall forward, but not backward.
- The individual may use their arms as much as possible during the broad jump.
- Distance is measured from the start line to the heel of the foot nearest to the start line.
- Distance is measured to the nearest whole centimeter.

WARM-UP PROCEDURE

1. Vertical jump
2. Jump out 1 foot length
3. 50% effort
4. 75% effort

Broad Jump Score Sheet

INITIAL TESTING

Broad Jump DO NOT NEED TO STICK LANDING Measured from start line to heel nearest to start line						
EXPLOSIVE CONTROL	TRIAL 1 (cm)	TRIAL 2 (cm)	TRIAL 3 (cm)	MAX DISTANCE	TARGET RATIO	RATIO
Broad Jump					**>110**	
Broad Jump Hands on Hips					**115-125**	

RE-TESTING

Broad Jump DO NOT NEED TO STICK LANDING Measured from start line to heel nearest to start line				
EXPLOSIVE CONTROL	TRIAL 1 (cm)	TRIAL 2 (cm)	TRIAL 3 (cm)	MAX DISTANCE
Broad Jump				
Broad Jump Hands on Hips				

Broad Jump DO NOT NEED TO STICK LANDING Measured from start line to heel nearest to start line				
EXPLOSIVE CONTROL	TRIAL 1 (cm)	TRIAL 2 (cm)	TRIAL 3 (cm)	MAX DISTANCE
Broad Jump				
Broad Jump Hands on Hips				

Broad Jump Interpretation

Broad Jump DO NOT NEED TO STICK LANDING Measured from start line to heel nearest to start line						
EXPLOSIVE CONTROL	TRIAL 1 (cm)	TRIAL 2 (cm)	TRIAL 3 (cm)	MAX DISTANCE	TARGET RATIO	RATIO
Broad Jump	**238**	**244**	**240**	**244**	**>110**	**139**
Broad Jump Hands on Hips	**211**	**210**	**208**	**211**	**115-125**	**115**

BROAD JUMP

At a minimum, we expect the individual to broad jump greater than their height.
Also, consult normative data for age, gender, and sport/activity.

This number should be greater than 110%.

Broad Jump Ratio:
(Broad Jump/Height) x 100
Example:

Height = 175cm
Broad Jump = 244cm
(244/175)x100=139

BROAD JUMP HANDS ON HIPS

Additionally, we expect the individual to broad jump with hands on hips about 20% less than with arms - 80% of their broad jump. The comparison of the two tests will give an idea of the individual's fundamental ability to use the upper and lower extremities to generate power.

Broad Jump Ratio:
(With Arm Swing/Hands on hips) x 100

Target Ratio = 115-125

Example:

Target = 244*.80= 195.5
(244/211)x100=115

If an individual scores significantly lower than 20%, we theorized that the individual is lacking the fundamental ability to use the upper and lower extremities to generate power.

Single-Leg Jump

OBJECTIVE

The single-leg jump is a single limb ballistic movement designed to highlight abnormal limb symmetry as it relates to power output. The single-leg jump has excellent reliability of lower extremity functional testing and is a valid performance-based outcome measure for individual's.

SET-UP

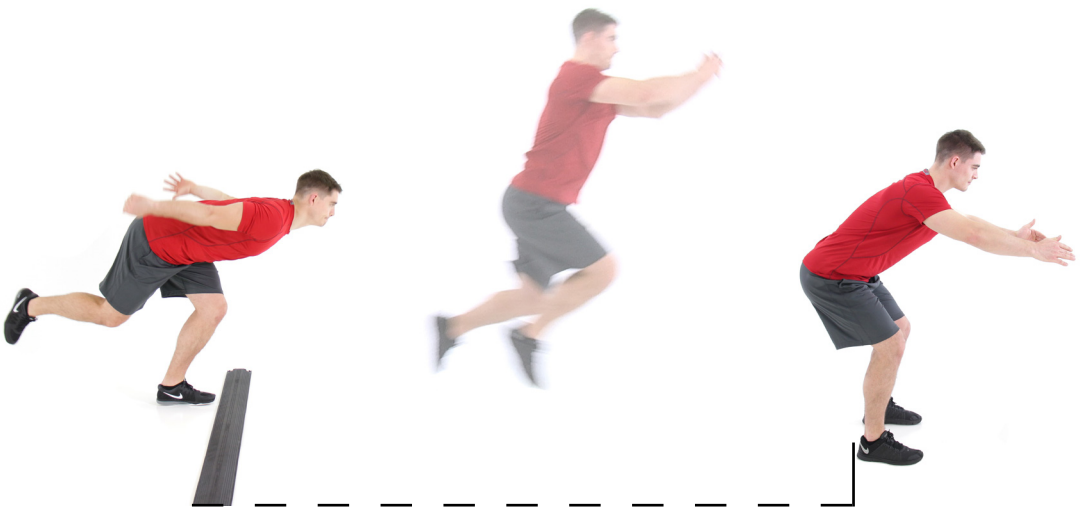
The individual should begin standing behind the line, then lifting one leg so they are standing on one leg. To ensure adequate understanding of the instructions and ensure safety with execution, have the individual perform the following warm-up procedure - alternating feet:

- Single leg vertical jump
- Jump out 1 foot length
- 50% effort single-leg jump
- 75% effort single-leg jump

Watch for good technique, safe landing position, and any pain.

ACTION

While standing on one leg, the individual will jump as far as they can, landing on two feet. They can use their arms as much possible to aid the jump. They can catch themselves with their hands if they start to fall forward when they land. However, if the individual falls backward or shuffles their feet when landing, that measurement will not be recorded and the jump will be redone.



WHAT ARE WE LOOKING FOR?

The individual should jump from one leg as far as they can under control - landing on both feet. They do not need to stick the landing - they just need to hold it long enough to mark the distance. They should perform 3 successful trials on each foot. Remember, perform the warm-up procedure prior to testing each leg!

HOW TO MEASURE

The jump distance is measured in centimeters from the start line to the heel of the closest foot to the start line.

SCORING

We will use the furthest recorded jump for both legs.

For the Single-Leg Jump test, we expect there to be a less than 5% difference between legs. We can use the following equation to calculate a ratio percentage between legs:

(Shortest Distance/Greatest Distance) X 100 = % difference between legs

This percentage should be greater than 95%.

SAFETY CONSIDERATIONS

- Does the individual jump frequently?
- Does the individual have an injury, pathology, instability which might be aggravated with jumping - such as a hip, knee, ankle instability or cartilage injury, or ACL/PCL/MCL/LCL tear?
- Does the individual have any current or previous issues that may be aggravated by jumping such as hip, knee, ankle instabilities or previous lower body surgeries?
- Do you have any current or previous issues that may be aggravated by jumping such as hip, knee, ankle instabilities or previous lower body surgeries?
- Did the individual score a 1 or 0 on any of the FMS tests? (pay particular attention to the Deep Squat!)
- Did the individual demonstrate valgus collapse - knee tracks inside of their feet - at any time during the test? If this cannot be corrected by verbal cueing, discontinue the test

Single-Leg Jump

VERBAL SAFETY INSTRUCTIONS

The following is a script to use while administering the Single-leg Jump. For consistency throughout all testing, this script should be used during each screen. The bold words represent what you should say to the participant.

- **Before we start I would like to ask you a few safety questions.**
- **Does your workout currently involve single leg jumping?**
- **Do you have a current injury, pathology, or instability that might be aggravated with testing? Such as hip, knee, ankle instability or ACL/PCL/MCL/LCL tears.**
- **Do you have any current or previous issues that may be aggravated by jumping such as hip, knee, ankle instabilities or previous lower body surgeries?**
- **Are there any reason why you should not jump?**

VERBAL INSTRUCTIONS

The following is a script to use while administering the Single-Leg Jump. For consistency throughout all testing, this script should be used during each screen. The bold words represent what you should say to the participant.

- **Participant should start by standing on one foot, with toes behind the starting line.**
- **First, practice hopping with a vertical jump, jump out a foot length, 50% effort, then 75% effort.**
- **Jump one time for distance and land on one or both feet.**
- **Participants may use their arms in any way they wish.**
- **Participants do not have to stick the landing – hold the landing just long enough to allow the distance to be marked.**
- **Measurements will be taken from the starting line to the heel of the foot closest to the starting line.**
- **There will be three trials for each foot - alternating trials between right and left feet.**
- **Repeat procedure with opposite foot.**
- **Distance is measured to the nearest centimeter**.

TIPS FOR TESTING

- At any time during testing if valgus collapse is observed and cannot be corrected through verbal cueing, discontinue testing.
- Stand on one foot, toes behind the start line.
- Jump for distance using your arms however you wish and land on one or both feet. You do not have to stick the landing, hold the landing just long enough to allow the distance to be marked.
- Repeat on the opposite foot (three trials for each foot).

WARM-UP PROCEDURE

(ALTERNATE FEET)

1. Single leg vertical jump
2. Jump out 1 foot length
3. 50% effort
4. 75% effort

Single-Leg Jump Score Sheet

INITIAL TESTING

Single-Leg Jump from Ground DO NOT NEED TO STICK LANDING Measured from start line to heel nearest to start line					
SIDE	TRIAL 1 (cm)	TRIAL 2 (cm)	TRIAL 3 (cm)	MAX DISTANCE	SYMMETRY
Left					
Right					

RE-TESTING

Single-Leg Jump from Ground DO NOT NEED TO STICK LANDING Measured from start line to heel nearest to start line					
SIDE	TRIAL 1 (cm)	TRIAL 2 (cm)	TRIAL 3 (cm)	MAX DISTANCE	SYMMETRY
Left					
Right					

Single-Leg Jump from Ground DO NOT NEED TO STICK LANDING Measured from start line to heel nearest to start line					
SIDE	TRIAL 1 (cm)	TRIAL 2 (cm)	TRIAL 3 (cm)	MAX DISTANCE	SYMMETRY
Left					
Right					

Single-Leg Jump Interpretation

Single-Leg Jump from Ground DO NOT NEED TO STICK LANDING Measured from start line to heel nearest to start line					
SIDE	TRIAL 1 (cm)	TRIAL 2 (cm)	TRIAL 3 (cm)	MAX DISTANCE	SYMMETRY
Left	198	200	203	203	98%
Right	201	205	207	207	

Limb Symmetry Index:

Determine which side had a shorter **max** jump distance and divide it by the other side and multiply by 100.

Calculations:

(Shortest Distance/Greatest Distance) x 100

Example:

If the left single-leg jump max was 203cm and the right max was 207cm, the equation would be:

(203/207) X 100 = 98%

Pass >95%

ENERGY STORING SCREEN

PURPOSE

Running involves not only the power that it takes to jump but also embraces a certain degree of energy storing. Toddlers learn to store some of the energy that is expressed in their power. They intuitively learn to recycle a percentage of their power when they run. Therefore, running adds the additional component of energy storing—any power gained by repetitive impacts compared to an initial impact would be the body storing some energy and re-purposing it into the next movement. Each of these things can be tested safely and effectively in a body-relative situation.

This Fundamental Capacity is **Impact Control** or **Recycled Energy** - **p**ower recycled for efficiency.

WHAT'S INVOLVED?

1. Double Broad Jump
2. Triple Broad Jump
3. 2-1-2 Bound

Double & Triple Broad Jump

OBJECTIVE

The double and triple broad jump are ballistic movements, which focus on the ability to energy transfer for explosive activities. We look to determine if the individual is able to use stored kinetic energy and the central nervous system to create maximal return on energy which enables maximal adaptability.

SET-UP

The individual should begin standing behind the line, feet a comfortable distance apart, to ensure adequate understanding of the instructions and ensure safety with execution, have the individual perform the following warm-up procedure:

- Double jump in place
- 50% effort double broad jump
- 75% effort double broad jump
- Triple jump in place
- 50% effort triple broad jump
- 75% effort triple broad jump

Watch for good technique, safe landing position, and any pain.

ACTION

The individual will first double broad jump and then triple broad jump as far as they can, both taking off and landing each jump with two feet. They can use their arms as much as possible to aid the jumps. The jumps should be in quick succession for maximum distance covered with all jumps combined.

The individual needs to hold the final landing just long enough to allow the distance to be marked. They can catch themselves with their hands if they start to fall forward when they land. However, if the individual falls backward or shuffles their feet when landing, that measurement will not be recorded and the jump will be redone.

498CM

751CM

Impact Control

WHAT ARE WE LOOKING FOR?

The individual should double and triple broad jump as far as they can under control - minimizing ground contact time. They do not need to stick the landing - they just need to hold it long enough to mark the distance. They should perform 3 successful trials for each jump. Remember, perform the warm-up procedure prior to testing!

HOW TO MEASURE

The double and triple broad jump distances are measured in centimeters from the start line to the heel of the closest foot to the start line.

SCORING

We will use the furthest recorded double and triple jump.

To determine their energy storage, we need to calculate the difference between their standard broad jump and their elastic broad jump. To calculate the length of one elastic broad jump, simply subtract the double broad jump from the triple broad jump. The difference will approximate the distance of their elastic broad jump. We expect there to be approximately 10% more than a single broad jump - this is due to the elastic and reactive(CNS) stored kinetic energy. We can use the following equation to calculate a ratio percentage between broad jump and triple jump:

((Triple Jump - Double Broad Jump)/Broad Jump) X 100

This percentage should be greater than 110%.

SAFETY CONSIDERATIONS

- Does the individual jump frequently?
- Does the individual have an injury, pathology, or instability which might be aggravated with jumping - such as a hip, knee, ankle instability or ACL/PCL/MCL/LCL tear?
- Does the individual have any current or previous issues that may be aggravated by jumping such as hip, knee, ankle instabilities or previous lower body surgeries?
- Did they have any problems with valgus collapse in the Explosive Control Quadrant?
- Did the individual score a 1 or 0 on any of the FMS tests? (pay particular attention to the Deep Squat!)
- Did the individual demonstrate valgus collapse - knee tracks inside of their feet - at any time during the test? If this cannot be corrected by verbal cueing, discontinue the test.

Double and Triple Broad Jump

VERBAL SAFETY INSTRUCTIONS

The following is a script to use while administering the Double and Triple Broad Jump. For consistency throughout all testing, this script should be used during each screen. The bold words represent what you should say to the participant.

- **Before we start I would like to ask you a few safety questions.**
- **Do you jump frequently?**
- **Do you have any current or previous issues that may be aggravated by jumping such as hip, knee, ankle instabilities or previous lower body surgeries?**

VERBAL INSTRUCTIONS

The following is a script to use while administering the Double and Triple Broad Jump. For consistency throughout all testing, this script should be used during each screen. The bold words represent what you should say to the participant.

- **Start standing on both feet, with toes behind the starting line.**
- **First, practice jumping in place three times.**
- **Now practice jumping with a Double Broad jump, 50% effort than 75% effort.**
- **Jump two times for distance without pausing between hops. Minimize ground contact time.**
- **Do not pause between jumps, spend as little time on the ground as possible.**
- **Use your arms in any way you wish.**
- **You do not have to stick the landing. You may fall forward but not backward.**
- **You will repeat 3 trials.**
- **Now practice jumping with a Triple Broad jump, 50% effort than 75% effort.**
- **Jump three times for distance without pausing between hops. Minimize ground contact time.**
- **Do not pause between jumps, spend as little time on the ground as possible.**
- **Use your arms in any way you wish.**
- **You do not have to stick the landing. You may fall forward but not backward.**
- **You will repeat 3 trials.**

TIPS FOR TESTING

- View the double and triple broad jump practice and test from the front until certain that no valgus collapse is occurring.
- At any time during the testing if valgus collapse cannot be corrected through verbal cueing, discontinue testing.
- Upon landing, the individual may fall forward, but not backward.
- The individual may use their arms as much as possible during the triple broad jump.
- Distance is measured from heel of the foot nearest to the initial jump line.
- Distance is measured to the nearest whole centimeter.
- If individual pauses between jumps, count as an attempt, repeat instructions and continue to the next attempt.

WARM-UP PROCEDURE

1. Double and Triple jump in place
2. Double jump with 50% effort
3. Double jump with 75% effort
4. Triple jump with 50% effort
5. Triple jump with 75% effort

Double & Triple Broad Jump Score Sheet

INITIAL TESTING

Double & Triple Broad Jump DO NOT NEED TO STICK LANDING Measured from start line to heel nearest to start line						
IMPACT CONTROL	TRIAL 1 (cm)	TRIAL 2 (cm)	TRIAL 3 (cm)	MAX DISTANCE	TARGET RATIO	RATIO
Double Broad Jump						
Triple Broad Jump					**>110**	

RE-TESTING

Double & Triple Broad Jump DO NOT NEED TO STICK LANDING Measured from start line to heel nearest to start line						
IMPACT CONTROL	TRIAL 1 (cm)	TRIAL 2 (cm)	TRIAL 3 (cm)	MAX DISTANCE	TARGET RATIO	RATIO
Double Broad Jump						
Triple Broad Jump					**>110**	

Double & Triple Broad Jump DO NOT NEED TO STICK LANDING Measured from start line to heel nearest to start line						
IMPACT CONTROL	TRIAL 1 (cm)	TRIAL 2 (cm)	TRIAL 3 (cm)	MAX DISTANCE	TARGET RATIO	RATIO
Double Broad Jump						
Triple Broad Jump					**>110**	

Double & Triple Broad Jump Interpretation

Triple Broad Jump DO NOT NEED TO STICK LANDING Measured from start line to heel nearest to start line						
IMPACT CONTROL	TRIAL 1 (cm)	TRIAL 2 (cm)	TRIAL 3 (cm)	MAX DISTANCE	TARGET RATIO	RATIO
Double Broad Jump	**489**	**495**	**498**	**498**		
Triple Broad Jump	**745**	**750**	**751**	**751**	**>110**	**104.9**

Compare the triple broad jump minus the double broad jump to their single broad jump. This should be approximately 10% more than a single broad jump due to elastic and reactive (CNS) stored kinetic energy.

Target should be greater than 110.

Triple Broad Jump Energy Storing Ratio:
((Triple Jump - Double Broad Jump)/Broad Jump) X 100

Example:
Broad Jump = 244cm
Double Jump = 498cm
Triple Jump = 751cm

((751-498)/244))x100=104.9

2-1-2 Bound

OBJECTIVE

The 2-1-2 bound screen gives an individual being tested an opportunity to demonstrate their ability to use stored kinetic energy against their previous attempts of power output.

SET-UP

The individual should begin standing behind the line with both feet, then taking one large step back from the start line- this will be the start position. To ensure adequate understanding of the instructions and ensure safety with execution, have the individual perform the following warm-up procedure:

- 2-1-2 jump in place
- 2-1 jump
- 50% effort 2-1-2 Bound
- 75% effort 2-1-2 Bound

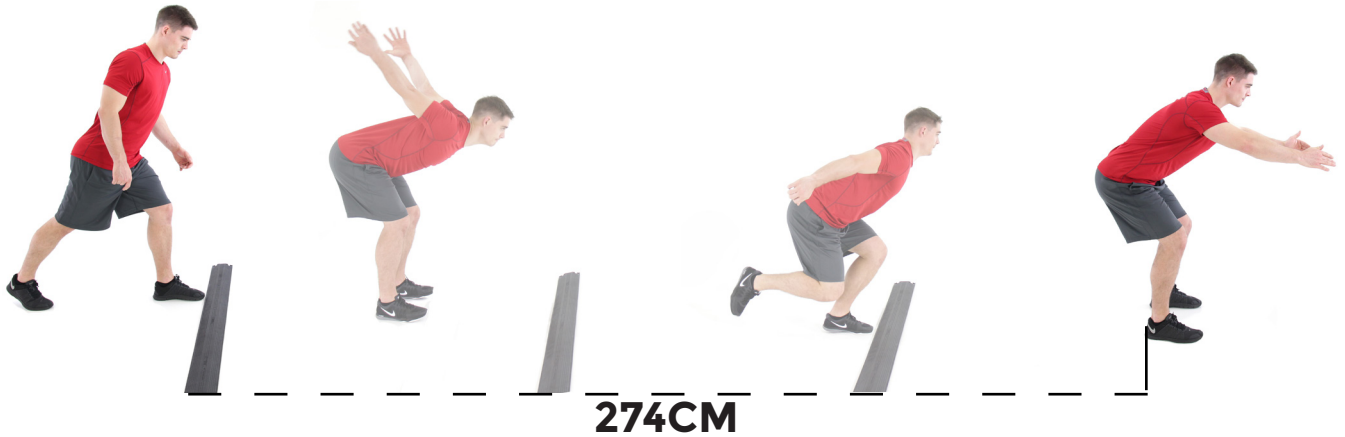
Watch for good technique, safe landing position, and any pain.

ACTION

The individual will jump off both feet at the same time, landing the left foot behind the starting line and immediately jumping off the left leg as far as possible, landing on 2 feet. They cannot cross the start line on first jump in order for the bound to count. They can use their arms as much possible to aid the jump. Minimize the pause on the single leg landing, spending as little time on the ground as possible.

The individual needs to hold the final landing just long enough to allow the distance to be marked. They can catch themselves with their hands if they start to fall forward when they land. However, if the individual falls backward or shuffles their feet when landing, that measurement will not be recorded and the jump will be redone.

Repeat with the right leg - and then alternate back and forth for 3 trials on each leg.



WHAT ARE WE LOOKING FOR?

The individual should 2-1-2 bound as far as they can under control - minimizing ground contact time. They do not need to stick the landing - they just need to hold it long enough to mark the distance. They should perform 3 successful trials on each leg. Make sure there is adequate rest for recovery between trials. Remember, perform the warm-up procedure prior to testing each leg!

HOW TO MEASURE

The 2-1-2 bound distance is measured in centimeters from the start line to the heel of the closest foot to the start line.

SCORING

We will use the furthest recorded 2-1-2 bound for each leg.

For the 2-1-2 bound, we expect at minimum the individual to bound at least 20% greater than their single-leg jump. We can use the following equation to calculate a ratio percentage:

(2-1-2 Bound /Single Limb Jump) X 100 = Energy Storage (%)

This percentage should be greater than 120%.

To compare the right and left legs, we can use the following calculation:

(Shortest Max Distance/Greatest Max Distance) X 100 = Limb Symmetry Index (%)

There should be less than a 5% difference between legs - or in another words, this number should be 95% or greater.

SAFETY CONSIDERATIONS

- Does the individual's current activity involve single limb hopping/jumping or running?
- Does the individual have an injury, pathology, stability which might be aggravated with jumping - such as a hip, knee, ankle instability or ACL/PCL/MCL/LCL tear?
- Does the individual have any current or previous issues that may be aggravated by jumping such as hip, knee, ankle instabilities or previous lower body surgeries?
- Did the individual score a 1 or 0 on any of the FMS tests? (pay particular attention to the Deep Squat!
- Can the individual perform the Broad Jump safely (no valgus collapse, no pain, etc.)?
- If you are unsure or do not feel confident in the individual's safety with landing mechanics, do not perform the 2-1-2 bound test.

2-1-2 Bound

VERBAL SAFETY INSTRUCTIONS

The following is a script to use while administering the 2-1-2 bound. For consistency throughout all testing, this script should be used during each screen. The bold words represent what you should say to the participant.

- **Before we start I would like to ask you a few safety questions.**
- **Do you currently perform single leg hopping/jumping or running during your workouts or activity.?**
- **Do you have any current or previous issues that may be aggravated by jumping such as hip, knee, ankle instabilities or previous lower body surgeries?**

VERBAL INSTRUCTIONS

The following is a script to use while administering the 2-1-2 Bound. For consistency throughout all testing, this script should be used during each screen. The bold words represent what you should say to the participant.

- **Stand on two feet, toes behind the start line.**
- **Take a large stride backward, this will be the start position for the bound.**
- **Jump off two feet at one time, landing on one foot behind the starting line, and as quickly as possible explode off that leg and land on 2 feet.**
- **You must take off before the starting line for the bound to count.**
- **Do not pause on the landing, spend as little time on the ground as possible.**
- **You do not have to stick the landing hold the landing, just long enough to allow the distance to be marked.**
- **There will be three trials for each foot - alternating trials between right and left feet.**
- **Continue through testing procedure.**

TIPS FOR TESTING

- Be sure the individual jumps up and off both feet simultaneously
- There will be three trials for each foot.
- The individual does not need to stick the landing - they may fall forward, but not backward.
- The individual may use their arms as much as possible during the 2-1-2- bound.
- Foot that lands behind the line is the leg we are measuring (2-**1**-2).
- If individual pauses on the jump, count as an attempt, repeat instructions and continue to the next attempt.

WARM-UP PROCEDURE

1. 2-1-2 jump in place
2. 2-1 Jump
3. 50% effort
4. 75% effort

(alternate between Left & Right)

2-1-2 Bound Score Sheet

INITIAL TESTING

2-1-2 Bound DO NOT NEED TO STICK LANDING Measured from start line to heel nearest to start line						
Side	TRIAL 1 (cm)	TRIAL 2 (cm)	TRIAL 3 (cm)	MAX DISTANCE	RATIO	SYMMETRY
Left						
Right						

RE-TESTING

2-1-2 Bound DO NOT NEED TO STICK LANDING Measured from start line to heel nearest to start line						
Side	TRIAL 1 (cm)	TRIAL 2 (cm)	TRIAL 3 (cm)	MAX DISTANCE	RATIO	SYMMETRY
Left						
Right						

2-1-2 Bound DO NOT NEED TO STICK LANDING Measured from start line to heel nearest to start line						
Side	TRIAL 1 (cm)	TRIAL 2 (cm)	TRIAL 3 (cm)	MAX DISTANCE	RATIO	SYMMETRY
Left						
Right						

2-1-2 Bound Interpretation

2-1-2 Bound DO NOT NEED TO STICK LANDING Measured from start line to heel nearest to start line						
Side	TRIAL 1 (cm)	TRIAL 2 (cm)	TRIAL 3 (cm)	MAX DISTANCE	RATIO	SYMMETRY
Left	**267**	**271**	**270**	**271**	**133%**	**99%**
Right	**270**	**272**	**274**	**274**	**132%**	

2-1-2 Ratio:

At a minimum, we expect the person to Bound at least 20% greater than single leg jump.

Calculations:

(2-1-2 Bound /Single Limb Jump) X 100 = Energy Storage (%)

Example:

Left 2-1-2 Distance = 271
Left Single-leg Distance = 203
271/203 x 100= 133%

Right 2-1-2 Distance = 274
Right Single-leg Distance = 207
274/207 x 100= 132%

Limb Symmetry Index:

Determine which side had a shorter **max** jump distance and divide it by the other side and multiply by 100.

Calculations:

(Shortest Max Distance/Greatest Max Distance) X 100 = Limb Symmetry Index (%)

Example:

If the left single-leg jump max was 271cm and the right max was 274cm, the equation would be:

(271/274) X 100 = 99%

Pass >= 95%

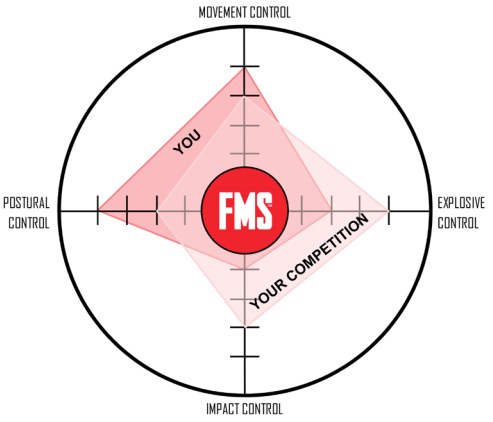
If we are to actually consider these fundamental movement capacities as fundamental, then we should have a simple way to discuss and utilize the information.

By having a general platform for movement capacity, we can look at fundamental components of the basic energy volumes that we have. Marathoners in this situation could be compared to other marathoners, firefighters to firefighters, and field and court sport athletes compared to each other. These comparisons let us know if there's a fundamental deficiency or an activity-specific deficiency.

How can we achieve this? We already have markers for success and failure in the sports, activities and occupations that require physical performance. When we identify successful individuals, we must look at their movement capacity vital signs. All individuals who meet criteria indicating success within specific environments can have Fundamental Capacity Screens that indicate their level of available resources in each category. Once meaningful data is collected, it would be logical that individuals who do not meet minimal resource criteria should not be expected to be successful. For success, they must first secure the minimal or vital resource of each category.

These screens work best when done in parallel with sport-specific testing. If there's a sport-specific deficiency that is also represented on the Fundamental Capacity Screen sheet, then it might be better to select more general fundamental activities to first create a general capacity before exploring a specific capacity for the simple fact of creating a more supportive foundation.

To create a simple visual perspective of these four fundamental movement capacities, the four points of a compass could be used—demonstrating activities that are contrasting, yet complementary and always connected. Represented on a circular or plot graph, they demonstrate the deficiency of a particular fundamental movement capacity in a perspective that allows both the coach and the athlete, or the trainer and the client, to articulate and understand how this deficiency could become a primary focus with programming.



These general movement capacities allow us to evaluate the fundamental effectiveness of performance programming.

The more performance testing looks like performance exercise, the more it is possible to 'practice the test,' with or without causing a fundamental change. In performance training program design, the real importance of these four screens is that they demonstrate whether the fundamental movement attribute is sufficient to create a base for the skill. The fundamental movement capacities represent the raw physical resources a human being draws from, whereas their athletic skill or performance skill demonstrates their resourcefulness with those resources.

With this simple model in place, we can demonstrate when sport-specific training is advantageous to both support general and specific fitness as well as when it is insufficient to develop non-specific resources. The old coaching adage, "Let the sport develop the fitness," can actually be supported through the same screening that can also indicate when additional supplementary training is needed. Moreover, it can point the most deficient attribute compared to other successful individuals within the same group.

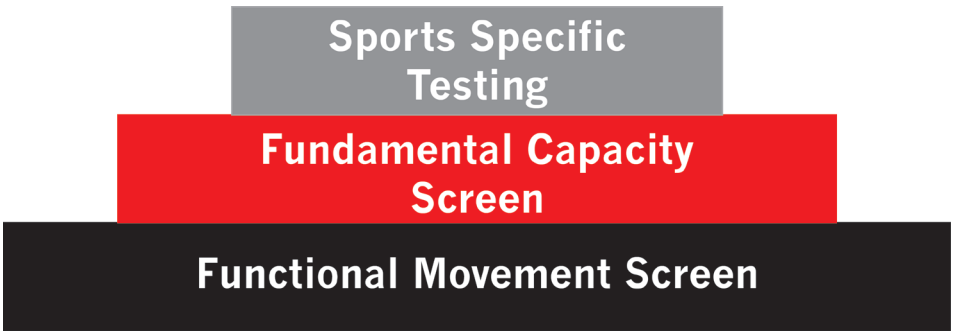
The concept of resourcefulness also helps us articulate a very fundamental strategy—one that is sometimes lost in performance programming. The 'great ones' aren't necessarily working with superior physical resources.

Often, they are more resourceful with the resources that they have (which in many cases are average or slightly above average). We use them as an example to present to people desiring performance programming: it is more important to meet the minimum criteria in each of the fundamental movement capacities than it is to have a superlative in any single fundamental movement.

capacity within your competing group. Obviously, certain sports and activities will have preferences for power, strength, endurance and other attributes, but it is important that these measures meet the minimums that have been created in the environments and by the groups where the individual wishes to be competitive.

It could be said that in specific performance testing we want to know how good someone is because it can help us predict success in the environment for which he/she is training. But in Fundamental Capacity Screening, we want to know how *bad* someone is. We want to make sure they have at least met their minimums. Obviously, training to have greater than minimum capability demonstrates a buffer zone or physical reserve, but many times we see an amazing physical reserve that is not used in a resourceful way (to create actual skill or be productive in the particular environment for which one is training.) Training can also be misused to create a buffer in one area (possibly an unnecessary area) while a deficiency remains is another (possibly a vital area.)

Fundamental Capacity Screening can be used alongside Functional Movement Screening. Correcting a dysfunction demonstrated on movement screening with a score of a '1' (unable to perform the movement) would be a priority over working on a general performance standard. When the general performance baseline is measured and corrective strategy is used to improve a dysfunctional movement into functional, it demonstrates that sometimes the best way to regain or create performance is to manage the dysfunctional pattern first. This Fundamental Capacity Screening represents a bridge between movement screening, the demonstration of movement literacy—into the expression of movement skill, demonstrated through specific-activity skill testing.



The three pieces of information: Functional Movement Screening, Fundamental Capacity Screening and specific movement testing, give us direction. If significant dysfunction is seen on the movement screen, that is the starting point. If movement screening information is adequate but there are fundamental physical capacity deficiencies, then it would be inappropriate to try to be more resourceful if resources are not available. In this situation, we work on general or fundamental physical resources. If both movement screening and fundamental movement capacities are adequate but skill is deficient, then it is obvious that the allocation of time and training should be focused on the desired skill, knowing that movement patterns, movement literacy and movement resources are available, they're simply not currently used in a resourceful manner.

By having three lieers of testing, we become more accurate with our programming and create tighter feedback loops for ourselves and the people we help.

Corrective Strategy Algorithm

An algorithm, as defined by Cormen, Leiserson, Reivest and Stein in *Introduction to Algorithms*, is "any well-defined procedure describing how to carry out a particular task." Within the FCS there is an algorithm or procedure for addressing the "weak link" found after testing.

Remember that you don't have to fix "everything," but rather the algorithm should point you towards the "one" thing you need to address as your priority.

While this may seem like a long process it takes less than a second or two to look at a report sheet and apply the algorithm.

IMPLICATIONS FOR NEXT BEST ACTION

Fundamental Movement Patterns

- [ ] Active Straight Leg Raise
- [ ] Shoulder Mobility
- [ ] Rotary Stability
- [ ] Trunk Stability Push-Up

Functional Movement Patterns

- [ ] Inline Lunge
- [ ] Hurdle Step
- [ ] Deep Squat

Single Limb Stressed Balance / Motor Control

- [ ] Lower Body MCS
- [ ] Upper Body MCS

Motor Control - Stress Against Posture for Work

- [ ] Carry Screen

Power Dissection and Demonstrated Jump

- [ ] Broad Jump
- [ ] Broad Jump Hands on Hips
- [ ] Single Leg Jump

Energy Storing Dissection and Demonstrated Bound

- [ ] Triple Broad Jump
- [ ] 2-1-2 Bound

Protect, Correct & Develop

- **Principle 1 states that we should first move well, then move often**
- **Principle 2 directs us to protect, correct, and develop the movement of those in our care**
- **Principle 3 tells us to create systems that enforce our philosophy**

If you believe in Principle 1, you honor it with Principle 2.

To take action on Principle 2, implement Principle 3.

If we lack fundamental movements, the path to fitness and health does not begin with supplementary exercise. That is the paradigm that puts quantity before quality—it attempts to build fitness on dysfunction—it focuses on parts. The first principle has somehow been reversed—people move often in hopes that moving well will just happen. It won't. And movement problems will only get worse when compounded by frequency and stress.

Why does the first principle work? Why do we move? Because movement affords us opportunity. It is on the foundation of movement that development occurs through the SAID principle: Specific Adaptation to Imposed Demand.

Moving well before moving often—this order offers us the greatest exposure to opportunities and reduced risk. Moving well before moving often also offers us the greatest adaptation to environment.

Let's pick back up and look at that word risk. It is not as scary as it sounds if we invoke our second principle: protection always precedes correction and correction always precedes development. We believe that nature's ability to nurture strong and gracefully aging bodies cannot be bested, but we also understand that nature is not concerned about or even aware of your personal or specific development. Nature is big and it can be harsh. Nature doesn't stop to wait for your adaptation and development and sometimes the lessons it teaches are not survivable. The second principle requires us to develop a non-failure strategy within our specific environment.

The SAID Principle should never be used as the sole excuse to lift more weight, run faster, climb farther, swim harder or fight bigger opponents. That thinking puts more before better. This statement should not sound negative to you in any way. Our pursuits of success create large amounts of risk and failure. Better to focus on non-failure at each level, ensuring a stable base for each new ability. Our entire system is set up to make sure that failure of a test proceeds unnecessary risk and exposure.

Guided by the Hippocratic Oath, first do no harm and then progress in a direction of independence and sustainability.
You do not move to the next level of development until you are competent and independent at your current level—and can sustain it. Principle 2 is our ethical principle, and we would rather injure your pride than your body.

- Protect from opportunities that do not promote productive feedback and/or impose risk.
- Correct feedback by magnifying misread obstacles within the learning path.
- Develop progressions with rich sensory experience and clear, robust feedback to foster independence and productive self-regulation.

Ankle Clearing Programming

Functional Movement Screen should be clean or improving. Prioritize FMS until individual has all symmetrical 2s, and no pain. These exercises are designed to be responsive in nature and not adaptive. An immediate response and positive change in the individual's capacity should be measured.

Half Kneeling Throws

Half Kneeling KB

Lower Body MCS Programming

Functional Movement Screen should be clean or improving. Prioritize FMS until individual has all symmetrical 2s, and no pain. These exercises are designed to be responsive in nature and not adaptive. An immediate response and positive change in the individual's capacity should be measured.

Balance Beam

Upper Body MCS Programming

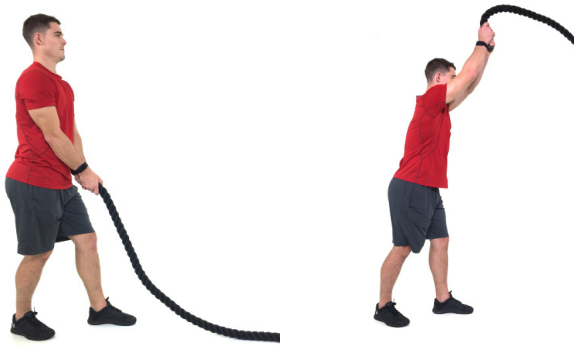
Functional Movement Screen should be clean or improving. Prioritize FMS until individual has all symmetrical 2s, and no pain. These exercises are designed to be responsive in nature and not adaptive. An immediate response and positive change in the individual's capacity should be measured.

Bear Crawls

Explosive Control Programming

Prioritize FMS until individual has all symmetrical 2s, and no pain. These exercises are designed to be responsive in nature and not adaptive. An immediate response and positive change in the individual's capacity should be measured.

Rope Waves



Explosive Control Programming

Prioritize FMS until individual has all symmetrical 2s, and no pain. These exercises are designed to be responsive in nature and not adaptive. An immediate response and positive change in the individual's capacity should be measured.

Indian Club Swing

Impact Control Programming

Prioritize FMS until individual has all symmetrical 2s, and no pain. These exercises are designed to be responsive in nature and not adaptive. An immediate response and positive change in the individual's capacity should be measured.

Indian Club Slam

Carry Screen Programming

Functional Movement Screen should be clean or improving. Prioritize FMS until individual has all symmetrical 2s, and no pain. These exercises are designed to be responsive in nature and not adaptive. An immediate response and positive change in the individual's capacity should be measured.

CORRECTIVES

6 Position Carry



KB Hold and Turn




Notes

Case Study 1

A 24-year-old-male former athlete is seeking a strength and conditioning consult related to improving his performance. The client is a former Division I college basketball plieer. Since graduating, he has noticed that he has lost the ability to dunk a basketball. He routinely participates in pick-up basketball games at the local gym and plays in recreational leagues. He reports no current pain but has a history of multiple left ankle sprains, the last of which occurred two years ago.

Height: 171 cm **Weight: 200 lbs.** **Blood pressure: 120/80 mmHg**

FUNCTIONAL MOVEMENT SCREEN

TEST		RAW SCORE	FINAL SCORE	STANDARD
DEEP SQUAT		2	2	PASS
HURDLE STEP	L	2	2	PASS
	R	2		
INLINE LUNGE	L	2	2	PASS
	R	2		
SHOULDER MOBILITY	L	2	2	PASS
	R	2		
IMPINGEMENT CLEARING TEST	L +/-	-	-	
	R +/-	-		
ACTIVE STRAIGHT-LEG RAISE	L	3	3	OPTIMAL
	R	3		
TRUNK STABILITY PUSHUP		2	2	PASS
PRESS-UP CLEARING TEST		-		
ROTARY STABILITY	L	2	2	PASS
	R	2		
POSTERIOR ROCKING CLEARING TEST		-		
TOTAL SCREEN SCORE		15		

Case Study 1

MOVEMENT CONTROL

MOTOR CONTROL SCREEN	RIGHT	LEFT	TARGET	SYMMETRY
Ankle Clearing (Beyond/Within/Behind Malleolus)	Behind	Behind	Beyond	
Pain	No	No		
Forward Reach	22	20	24	2
Upward Reach	25	25		1
Foot Length	12			

POSTURAL CONTROL

BODY WEIGHT	75% BW	CARRIED	DISTANCE (FT)	TIME (SEC)	CARRY ENERGY
200	150	150	255	95	18169
		TARGET	250	>90	15801

POWER CONTROL

POWER CONTROL	MAX DISTANCE (CM)	TARGET RATIO	POWER RATIO
Broad Jump	181	>110%	105
Broad Jump Hands on Hips	150	115-125	120

HOP TEST	MAX LEFT (cm)	MAX RIGHT (cm)	TARGET	RATIO
Single-Leg Jump	102	105	≥95%	97%

IMPACT CONTROL

TRIPLE BROAD JUMP	MAX DISTANCE (cm)	TARGET RATIO	ENERGY STORING RATIO
Double Broad Jump	441		
Triple Broad Jump	700	>110	143

2-1-2 Bound	MAX LEFT (cm)	MAX RIGHT (cm)	TARGET	% SYMMETRY
2-1-2 Bound	110	130	>120 Difference ≤5%	20%
Energy Storing Ratio	110	124		14%

Case Study 1

EXPLANATION:

This individual's performance goals are to improve jumping ability. Review of his Functional Movement Screen scores shows no red flags or significant movement pattern limitations or asymmetries.

RESULTS OF HIS FUNDAMENTAL CAPACITY ARE:

- The dorsiflexion screen displays a significant ankle dorsiflexion ROM limitation bilaterally. This limits the body's ability to process sensory input needed for an appropriate motor control response.
- The forward reach direction of the lower body motor control screen shows a significant asymmetry (>1.5-inch difference) likely related to poor bilateral ankle dorsiflexion ROM and left anterior impingement.
- The results of the 2-1-2 bound test identifies a fundamental inability to utilize the stored energy gained through multiple landing impacts and apply it to increased hopping capacity. This energy leak can be traced back to the limited ankle dorsiflexion ROM identified through the dorsiflexion screening.

PERFORMANCE FINDINGS:

- Bilateral ankle mobility resulting in dysfunctional motor control and energy storing.

FUNDAMENTAL CAPACITY GOALS:

- Improve ankle mobility and improve motor control and energy storing.

Case Study 2

A 28-year-old female is seeking advice related to improving her fitness. The client did not participate in sports in high school but has recently started a CrossFit program to improve her fitness. She has made rapid progress with her training but has recently hit a plateau in her deadlift performance. She reports no current pain but has a history of occasional low back pain episodes.

Height: 165 cm **Weight: 120 lbs.** **Blood pressure: 120/80 mmHg**

FUNCTIONAL MOVEMENT SCREEN

TEST		RAW SCORE	FINAL SCORE	STANDARD
DEEP SQUAT		2	2	PASS
HURDLE STEP	L	2	2	PASS
	R	2		
INLINE LUNGE	L	2	2	PASS
	R	2		
SHOULDER MOBILITY	L	3	3	OPTIMAL
	R	3		
IMPINGEMENT CLEARING TEST	L +/-	-	-	
	R +/-	-		
ACTIVE STRAIGHT-LEG RAISE	L	3	3	OPTIMAL
	R	3		
TRUNK STABILITY PUSHUP		2	2	PASS
PRESS-UP CLEARING TEST		-		
ROTARY STABILITY	L	2	2	PASS
	R	2		
POSTERIOR ROCKING CLEARING TEST		-		
TOTAL SCREEN SCORE		16		

Case Study 2

MOVEMENT CONTROL

MOTOR CONTROL SCREEN	RIGHT	LEFT	TARGET	SYMMETRY
Ankle Clearing (Beyond/Within/Behind Malleolus)	Beyond	Beyond	Beyond	
Pain	No	No		
Forward Reach	19.5	23	22	3.5
Upward Reach	25	24		1
Foot Length	11			

POSTURAL CONTROL

BODY WEIGHT	75% BW	CARRIED	DISTANCE (FT)	TIME (SEC)	CARRY ENERGY
120	90	90	250	91	17,063
		TARGET	250	>90	16,875

POWER CONTROL

POWER CONTROL	MAX DISTANCE (cm)	TARGET RATIO	POWER RATIO
Broad Jump	168	>110	101
Broad Jump Hands on Hips	136	115-125	124

HOP TEST	MAX LEFT (cm)	MAX RIGHT (cm)	TARGET	% SYMMETRY
Single-Leg Jump	72	75	≥95%	96%

IMPACT CONTROL

TRIPLE BROAD JUMP	MAX DISTANCE (cm)	TARGET RATIO	ENERGY STORING RATIO
Double Jump	334		
Triple Broad Jump	500	>110	99

2-1-2 Bound	MAX LEFT (cm)	MAX RIGHT (cm)	TARGET RATIO	% SYMMETRY
2-1-2 Bound	79	87	>120 Difference ≤5%	9%
Energy Storing	113	116		3%

Case Study 2

EXPLANATION:

This individual's performance goals are to improve deadlifting strength. Review of her Functional Movement Screen scores shows no significant movement pattern limitations.

RESULTS OF HER FUNDAMENTAL CAPACITY SCREEN ARE:

- The dorsiflexion screen displies that there is an adequate amount of ankle dorsiflexion ROM present.
- The forward reach direction of the lower body motor control screen shows a significant asymmetry (>1.5-inch difference) on the left vs. the right. In addition to the asymmetry, the client is also unable to reach greater than 2x her foot length on the left.
- Since the ankle shows an acceptable quantity of ROM it can be assumed that the reach distance asymmetry is a function of poor motor control output. In other words, the client is unable to control the ROM that she possesses.

PERFORMANCE FINDINGS:

- Right lower body motor control dysfunction

FUNDAMENTAL CAPACITY GOALS:

- Improve right lower body motor control

Case Study 3

A 42-year-old-male ex-military officer, is wishing to return to competitive tennis. He had some shoulder tendinitis last year. He had rehab and has been cleared for activity without restrictions from both his physical therapist and surgeon. He reports no current pain in his shoulder.

Height: 185 cm **Weight: 180 lbs.** **Blood pressure: 118/78 mmHg**

FUNCTIONAL MOVEMENT SCREEN

TEST		RAW SCORE	FINAL SCORE	STANDARD
DEEP SQUAT		2	2	PASS
HURDLE STEP	L	2	2	PASS
	R	2		
INLINE LUNGE	L	3	3	OPTIMAL
	R	3		
SHOULDER MOBILITY	L	2	2	PASS
	R	2		
IMPINGEMENT CLEARING TEST	L +/-	-	-	
	R +/-	-		
ACTIVE STRAIGHT-LEG RAISE	L	3	3	OPTIMAL
	R	3		
TRUNK STABILITY PUSHUP		2	2	PASS
PRESS-UP CLEARING TEST		-		
ROTARY STABILITY	L	2	2	PASS
	R	2		
POSTERIOR ROCKING CLEARING TEST		-		
TOTAL SCREEN SCORE		16		

Case Study 3

MOVEMENT CONTROL

MOTOR CONTROL SCREEN	RIGHT	LEFT	TARGET	SYMMETRY
Ankle Clearing (Beyond/Within/Behind Malleolus)	Beyond	Beyond	Beyond	
Pain	No	No		
Forward Reach	25	25	24	0
Upward Reach	25	25		1
Foot Length	12			

POSTURAL CONTROL

BODY WEIGHT	75% BW	CARRIED	DISTANCE (FT)	TIME (SEC)	CARRY ENERGY
180	135	135	250	95	19238
		TARGET	250	>90	16,875

POWER CONTROL

POWER CONTROL	MAX DISTANCE (cm)	TARGET RATIO	POWER RATIO
Broad Jump	190	>110	102
Broad Jump Hands on Hips	170	115-125	112

HOP TEST	MAX LEFT (cm)	MAX RIGHT (cm)	TARGET	% SYMMETRY
Single-Leg Jump	80	83	≥95%	96%

IMPACT CONTROL

TRIPLE BROAD JUMP	MAX DISTANCE (cm)	TARGET RATIO	ENERGY STORING RATIO
Double Broad Jump	424		
Triple Broad Jump	660	>110	124

2-1-2 Bound	MAX LEFT (cm)	MAX RIGHT (cm)	TARGET RATIO	% SYMMETRY
2-1-2 Bound	97	101	>120 Difference ≤5%	4%
Energy Storing	121	122		1%

Case Study 3

EXPLANATION:

This individual's performance goals are to return to competitive tennis following a time off. Review of his Functional Movement Screen scores shows no significant movement pattern limitations.

RESULTS OF HIS FUNDAMENTAL CAPACITY SCREEN ARE:

- The broad jump with arms test shows that the client is able to jump at least the distance of his height.
- The broad jump ratio for this client is 112, however, we would expect the ratio to fall within the range of 115 to 125. When comparing the broad jump with arms test to the broad jump with hands on hips test we expect to see about a 20% decrease in distance jumped. However, in this case the client's jump distance, when the upper body is disadvantaged, only decreased by 12%. This disparity is indicative of the client's inability to link his lower body with his upper body. In other words, he is not timing his upper extremities through his core to generate the power.
- Better upper body and lower body linkage would result in better overall power output.

PERFORMANCE FINDINGS:

- Upper body kinetic sequencing dysfunction

FUNDAMENTAL CAPACITY GOALS:

- Improve the power generating linkage and sequencing between the lower body and upper body.

Case Study 4

An 18-year-old high school senior has requested your strength and conditioning expertise regarding improving with speed on the football field. The client is a starting cornerback on the varsity football team. His goal is to continue playing football in college. He has no current pain and his only injury history is a right hamstring strain his sophomore year.

Height: 178 cm **Weight: 165 lbs.** **Blood pressure: 114/70 mmHg**

FUNCTIONAL MOVEMENT SCREEN

TEST		RAW SCORE	FINAL SCORE	STANDARD
DEEP SQUAT		2	2	PASS
HURDLE STEP	L	2	2	PASS
	R	2		
INLINE LUNGE	L	2	2	PASS
	R	2		
SHOULDER MOBILITY	L	2	2	PASS
	R	2		
IMPINGEMENT CLEARING TEST	L +/-	-	-	
	R +/-	-		
ACTIVE STRAIGHT-LEG RAISE	L	2	2	PASS
	R	2		
TRUNK STABILITY PUSHUP		2	2	PASS
PRESS-UP CLEARING TEST		-		
ROTARY STABILITY	L	2	2	PASS
	R	2		
POSTERIOR ROCKING CLEARING TEST		-		
TOTAL SCREEN SCORE		14		

Case Study 4

MOVEMENT CONTROL

MOTOR CONTROL SCREEN	RIGHT	LEFT	TARGET	SYMMETRY
Ankle Clearing (Beyond/Within/Behind Malleolus)	Beyond	Beyond	Beyond	
Pain	No	No		
Forward Reach	28	27	24	1
Upward Reach	27	28		1
Foot Length	12			

POSTURAL CONTROL

BODY WEIGHT	75% BW	CARRIED	DISTANCE (cm)	TIME (SEC)	CARRY ENERGY
164	127.5	127.5	260	92	18484
		TARGET	250	>90	16,875

POWER CONTROL

POWER CONTROL	MAX DISTANCE (cm)	TARGET RATIO	POWER RATIO
Broad Jump	200	>110	112
Broad Jump Hands on Hips	116	115-125	120

HOP TEST	MAX LEFT (cm)	MAX RIGHT (cm)	TARGET	% SYMMETRY
Single-Leg Jump	109	104	≥95%	95%

IMPACT CONTROL

TRIPLE BROAD JUMP	MAX DISTANCE (cm)	TARGET RATIO	ENERGY STORING RATIO
Double Broad Jump	460		
Triple Broad Jump	720	>110	130

2-1-2 Bound	MAX LEFT (cm)	MAX RIGHT (cm)	TARGET RATIO	% SYMMETRY
2-1-2 Bound	145	120	>120 Difference ≤5%	17%
Energy Storing	133	115		110%

Case Study 4

EXPLANATION:

This individual's performance goals are to improve speed to enhance performance on football field. Review of his Functional Movement Screen scores shows no significant movement pattern limitations.

Results of his Fundamental Capacity Screen are:

- The 2-1-2 bound test shows a significant right vs. left asymmetry of over 17%. Acceptable asymmetry would be < 5%.
- The client's energy storing ratio should be >120, however on the right is ratio is 110. When comparing the 2-1-2 bound test with the client's single-leg jump test we would expect to see about a 20% improvement in total distance jumped due to the energy storing component of the bound. However, this individual only gains an additional 10% of jumping distance on the right side when preloaded. This indicates an inability to appropriately store and use the energy gained from the bound.
- Better energy storing ability would likely transfer into better running and cutting potential thereby improving overall running speed.

PERFORMANCE FINDINGS:

- Right lower body energy storing dysfunction

TREATMENT GOALS:

- Improve the energy storing ability of the right lower body.

Case Study 5

A 35-year-old female is wishing to return to fitness following the birth of her second child. Her main goal is to start participating in yoga and Zumba classes on a weekly basis. Pt has a history of low back pain but reports no symptoms recently.

Height: 178 cm **Weight: 150 lbs.** **Blood pressure: 128/86 mmHg**

FUNCTIONAL MOVEMENT SCREEN

TEST		RAW SCORE	FINAL SCORE	STANDARD
DEEP SQUAT		2	2	PASS
HURDLE STEP	L	2	2	PASS
	R	2		
INLINE LUNGE	L	2	2	PASS
	R	2		
SHOULDER MOBILITY	L	3	3	OPTIMAL
	R	3		
IMPINGEMENT CLEARING TEST	L +/-	-	-	
	R +/-	-		
ACTIVE STRAIGHT-LEG RAISE	L	2	2	PASS
	R	2		
TRUNK STABILITY PUSHUP		2	2	PASS
PRESS-UP CLEARING TEST		-		
ROTARY STABILITY	L	2	2	PASS
	R	2		
POSTERIOR ROCKING CLEARING TEST		-		
TOTAL SCREEN SCORE		15		

Case Study 5

MOVEMENT CONTROL

MOTOR CONTROL SCREEN	RIGHT	LEFT	TARGET	SYMMETRY
Ankle Clearing (Beyond/Within/Behind Malleolus)	Within	Within	Beyond	
Pain	No	No		
Forward Reach	20	21	20	1
Upward Reach	22	21		1
Foot Length	10			

POSTURAL CONTROL

BODY WEIGHT	75% BW	CARRIED	DISTANCE (FT)	TIME (SEC)	CARRY ENERGY
150	112.5	112	190	70	9975
		TARGET	250	>90	16,875

POWER CONTROL

POWER CONTROL	MAX DISTANCE (cm)	TARGET RATIO	POWER RATIO
Broad Jump	174	>110	98
Broad Jump Hands on Hips	145	115-125	120

HOP TEST	MAX LEFT (cm)	MAX RIGHT (cm)	TARGET	% SYMMETRY
Single-Leg Jump	96	99	≥95%	97%

IMPACT CONTROL

TRIPLE BROAD JUMP	MAX DISTANCE (cm)	TARGET RATIO	ENERGY STORING RATIO
Double Broad Jump	405		
Triple Broad Jump	635	>110	132

2-1-2 Bound	MAX LEFT (cm)	MAX RIGHT (cm)	TARGET RATIO	% SYMMETRY
2-1-2 Bound	120	125	>120	4%
Energy Storing	125	126	Difference ≤5%	1%

Case Study 5

EXPLANATION:

This individual's performance goals are to return to fitness and start taking yoga and Zumba classes following a time off since her pregnancy. Review of her Functional Movement Screen scores shows no significant movement pattern limitations.

Results of her Fundamental Capacity Screen are:

- The 75% body weight carry test revealed that the client was unable to maintain postural integrity under load for an acceptable distance and time.
- When in a fatigue state the prime movers should be the first muscle groups to lose integrity, however, as seen in this case the stabilizer muscles are fatiguing first resulting in an inability to maintain postural control.
- Better postural integrity leads to better stabilization in general which allows for the opportunity for strength improvements.

PERFORMANCE FINDINGS:

- Postural integrity dysfunction

TREATMENT GOALS:

- Improve postural integrity under load.

Notes

FUNDAMENTAL CAPACITY SCREEN

FCS DATA COLLECTION SHEET

FIRST NAME: LAST NAME: DOB:

GENDER: M ☐ F ☐ DATE: HEIGHT (in or cm): WEIGHT (lbs or kg):

MEDICAL HISTORY

1. Are you currently injured or recovering from an injury ? ☐ YES ☐ NO

Please describe: _____

2. Do you have pain anywhere in the body with activity ? ☐ YES ☐ NO

Please describe: _____

3. In the past year, have you had an injury/surgery that caused you to miss **1 or more practice, game, exercise session, or work?** ☐ YES ☐ NO

Please describe: _____

4. Have you ever had an injury/surgery that caused you to miss **more than 7 days of practices, games, exercise sessions, or work?** ☐ YES ☐ NO

Please describe: _____

5. Have you had a concussion or head injury in the past year?

☐ YES ☐ NO

6. If you've EVER had a previous injury, on the scale below (0 to 100%), rate your function (how back to "normal" do you feel?)

No Function ○ ○ ○ ○ ○ ○ ○ ○ ○ Normal

7. How often have you had low back pain in the past year?

☐ Daily ☐ Once Per Week ☐ Once Per Month ☐ 2-3 Times in the past year ☐ Never

FUNDAMENTAL CAPACITY SCREEN

FCS DATA COLLECTION SHEET

CURRENT ACTIVITY LEVEL

1. How many days a week do you perform at least 30 minutes of cardiovascular exercise? _____

2. What is your mile running or walking pace (minutes per mile)? _____

3. When was the last time you recorded this pace? _____

4. How many days a week do you perform strength training? _____

5. Have you performed plyometric exercises or activities that involve jumping in the past 6 months? ☐ YES ☐ NO

6. Which of the following describes your activity? Mark all that apply.

☐ Competitive Sports
☐ Recreational Sport
☐ Recreational Activity
☐ Work

7. Please list the sports, fitness activities, or work you participate in?

Sport _____ Position _____

Work _____ Job Description _____

Which of the following best describes your work demands?

☐ None: I currently do not work/retired
☐ Sedentary: Requires the occasional lifting of 10 lbs. Or less
☐ Light: Requires lifting a maximum of 20 lbs.
☐ Medium: Requires lifting a maximum of 50 lbs., But with frequent lifting of up to 25 lbs.
☐ Heavy: Requires lifting a maximum of 100 lbs.
☐ Very Heavy: Requires lifting in excess of 100 lbs., With frequent lifting of 50 lbs. Or more.

8. Which of the following best describes your activity level outside of work?

☐ None
☐ Sedentary: Minimal to no physical activity for fitness or leisure purposes.
☐ Light: Light aerobic exercise such as walking or bike riding or swimming. Recreational sports such as tennis, golf, etc.
☐ Moderate: Aerobic activity such as running, swimming, biking, group programs such as aerobics, spinning, Zumba,and may include associated individual strength training or associated group programs such as CrossFit, Insanity, kettlebells, etc.
☐ Competitive sports or Vigorous fitness: High level competitive sports or participate in triathlons, marathons, or other extreme sports.

How many days per week do you participate in your activity?

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐

FUNDAMENTAL CAPACITY SCREEN

FCS DATA COLLECTION SHEET

REST AND REGENERATION

1. Do you feel tense? ☐ YES ☐ NO

2. Do you feel a cold sensation in your hands or feet? ☐ YES ☐ NO

3. Do you notice yourself yawning? ☐ YES ☐ NO

4. Do you notice breathing through your mouth at night? ☐ YES ☐ NO

5. On average how many hours of uninterrupted sleep do you get night per week? _____

6. On the scale below, how do you feel about your night's rest (non-interrupted sleep)?

○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

No Rest — Little Rest — Moderate Rest — Full Rest

7. Please answer the following regarding your sleep quality?

☐ YES ☐ NO I am satisfied with the quality and length of my sleep

☐ YES ☐ NO I snore, wake up gaspinng/stop breathing

☐ YES ☐ NO I don't sleep well because of pain

☐ YES ☐ NO I don't get a restful sleep, but it's NOT interfering with my daytime functioning/performance

☐ YES ☐ NO I use non-prescription medication/supplements because I have trouble sleeping

8. On average, how much energy do you have throughout the day?

○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

No Energy — Little Energy — Moderate Energy — Full Energy

9. On average how often do you experience drowsiness throughout the day?

○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

Frequently — Occasionally — Never

10. On average how drowsy do you feel sitting quietly after lunch?

○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

Frequently — Occasionally — Never

11. Do you have any problems with constipation or loose stools, small/large volume, excessive bloating or gas?

☐ YES ☐ NO

TEST		RAW SCORE	FINAL SCORE	COMMENTS
DEEP SQUAT				
HURDLE STEP	L			TT Height:
	R			
INLINE LUNGE	L			
	R			
SHOULDER MOBILITY	L			Hand Length:
	R			
SHOULDER CLEARING TEST	L +/-			
	R +/-			
ACTIVE STRAIGHT-LEG RAISE	L			
	R			
TRUNK STABILITY PUSHUP				
EXTENSION CLEARING TEST	+/-			
ROTARY STABILITY	L			
	R			
FLEXION CLEARING TEST	+/-			
TOTAL SCREEN SCORE				

The Beighton Criteria are used to determine if a person has a connective tissue dysfunction. We are collecting this information to determine if there is a relationship to movement patterns for these individuals and ultimately whether these individuals might need a different course of intervention.

		LEFT	RIGHT
	Little (fifth) finger Passive dorsiflexion beyond 90º		
	Thumb Passive dorsiflexion to the flexor aspect of the forearm		
	Elbow Hyperextends beyond 10º		
	Knee Hyperextends beyond 10º		
	Forward flexion of trunk with knees full extended Palms and hands can rest flat on the floor		
	TOTAL / 9		

FUNDAMENTAL CAPACITY SCREEN

FUNDAMENTAL CAPACITY SCREEN SCORE SHEET

MOVEMENT CONTROL

MOTOR CONTROL SCREEN	RIGHT	LEFT	TARGET	SYMMETRY
Ankle Clearing (Beyond/Within/Behind Malleolus)			Beyond	
Pain				
Where is it felt?				
Forward Reach				
Wrist Extension Clearing -/+				
Horizontal Adduction Clearing -/+				
Horizontal Reach				
FOOT LENGTH				

EXPLOSIVE CONTROL

POWER CONTROL	MAX DISTANCE (cm)	TARGET RATIO	RATIO
Broad Jump		>110	
Broad Jump Hands on Hips		115-125	

SINGLE-LEG JUMP TEST	MAX LEFT (cm)	MAX RIGHT (cm)	TARGET SYMMETRY	% SYMMETRY
Single-Leg Jump			>95%	

IMPACT CONTROL

TRIPLE BROAD JUMP	MAX DISTANCE (cm)	TARGET
Double Broad Jump		
Triple Broad Jump		
Energy Storing Ratio		>110

2-1-2 Bound	MAX LEFT (cm)	MAX RIGHT (cm)	TARGET	% SYMMETRY
2-1-2 Bound			>95%	
Energy Storing Ratio			>20%	

POSTURAL CONTROL

BODY WEIGHT	75% BW	CARRIED	DISTANCE (ft)	TIME (SEC)	CARRY LOAD
		TARGET	>250	>90	

FUNDAMENTAL CAPACITY SCREEN

POSITION				
	Flexed	Overhead	Flexed	Overhead
Trial 1 (kg)				
Trial 2 (kg)				
Trial 3 (kg)				
Greatest				
Average				

FUNDAMENTAL CAPACITY SCREEN

ARM HANGS SCORE SHEET

BOTTOMS UP KB	LEFT WEIGHT	RIGHT WEIGHT
Squat		
Press		

ARM HANGS	TIME (sec)
Extended	
Flexed	

FUNDAMENTAL CAPACITY SCREEN

MOTOR CONTROL SCORE SCORE SHEET

Ankle Clearing:
Measurement will be taken dropping the yard stick in a vertical line from the forward most part of the bent knee to the floor, determine if the knee crosses front edge of the medial malleolus.

Reach Testing Order:
Lower Body MCS right forward (three trials minimum) followed by Left forward.
Upper Body MCS right horizontal reach (three trials minimum) followed by left horizontal reach.
The maximal reach distance is measured by reading the number indicated on the kit, at the point closest to the reach foot in half-inches or centimeters.

Review Par Q and History forms

Is there any reason why this person should not participate? ☐ YES ☐ NO Initials

ANKLE CLEARING	RIGHT	LEFT
Ankle Clearing (Beyond/Within/Behind Malleolus)		
Closed Chain Dorsiflexion (ROM) If applicable		
Pain Y/N		
Where is it felt?	Front Back Both None	Front Back Both None

Lower Body Motor Control Screen

DIRECTION	GREATEST RIGHT	GREATEST LEFT
Forward Reach		
Foot Length		

Upper Body Motor Control Screen

CLEARING		
Wrist Extension Screen +/-		
Horizontal Adduction Screen +/-		
DIRECTION	GREATEST RIGHT	GREATEST LEFT
Horizontal Reach		

FUNDAMENTAL CAPACITY SCREEN

MOTOR CONTROL SCORE SCORE SHEET

FOOT-LENGTH (IN)	2 X FL
5	10
5.5	11
6	12
6.5	13
7	14
8	16
8.5	17
9	18
9.5	19
10	19
10.5	21
11	22
11.5	23
12	24
12.5	25
13	26
13.5	27
14	28
14.5	29
15	30
15.5	31
16	32
16.5	33
17	34
17.5	35
18	36

FOOT-LENGTH (CM)	2 X FL
12	24
13	26
14	28
15	30
16	32
17	34
18	36
19	38
20	40
21	42
22	44
23	46
24	48
25	50
26	52
27	54
28	56
29	58
30	60
31	62
32	64
33	66
34	68
35	70
36	72

FOOT-LENGTH (CM)	2 X FL
37	74
38	76
39	78
40	80
41	82
42	84
43	86
44	88
45	90
46	92

Interpretation:

For the Lower Quarter Motor Control Screen, we expect Less than a 1.5 inch or 4cm right/left asymmetry. The individual should also be able to reach greater than 2x times foot length.

For the Upper Quarter Motor Control Screen, we expect Less than a 1.5 inch or 4cm right/left asymmetry. The individual should also be able to reach greater than 2x times foot length.

FUNDAMENTAL CAPACITY SCREEN

EXPLOSIVE CONTROL SCORE SHEET

Broad Jump	Trial 1 (cm)	Trial 2 (cm)	Trial 3 (cm)	Max distance
With Arm Swing				
With Hands on Hips				

Apprehension or pain with previous testing? ☐ YES ☐ NO

Is there any reason this person should not continue to next test? ☐ YES ☐ NO

Single-Leg Jump				
Side	Trial 1 (cm)	Trial 2 (cm)	Trial 3 (cm)	Max distance
Left				
Right				

Apprehension or pain with previous testing? ☐ YES ☐ NO

Is there any reason this person should not continue to next test? ☐ YES ☐ NO

Interpretation:

1. At a minimum, we expect the person to broad jump his /her height (i.e. should be greater than 100)

Also, consult normative data for age, gender, and sport/activity.

(_____ / _____)x100 = _____
Broad Jump Height

2. **(Broad Jump with Arms/Broad Jump with Hand on Hips) x100 (Take max distance for calculations)**

This number should be greater than 120. The comparison of the two tests will give an idea of the individual's fundamental ability to use the upper and lower extremities to generate power.

(_____ / _____) x100 = _____
Broad Jump With Arms; Broad Jump with Hands on Hips

3. Limb Symmetry Index:

Determine which side had a shorter greatest single leg jump distance and divide it by the other side and multiply by 100

For example, if the left single leg jump was 130cm and the right was 135cm the equation would be:

(130/135) X 100 = 96.2% (That value should be greater than 95%)

(_____ / _____) x 100=_____
Shorter Greatest; Greatest other Leg

FUNDAMENTAL CAPACITY SCREEN

IMPACT CONTROL SCORE SHEET

Triple Broad Jump				
	Trial 1 (cm)	Trial 2 (cm)	Trial 3 (cm)	Max distance
Double Broad Jump				
Triple Broad Jump				

Apprehension or pain with previous testing? ☐ YES ☐ NO

Is there any reason this person should not continue to next test? ☐ YES ☐ NO

2-1-2 Bound				
Side	Trial 1 (cm)	Trial 2 (cm)	Trial 3 (cm)	Max distance
Left				
Right				

Apprehension or pain with previous testing? ☐ YES ☐ NO

Is there any reason this person should not continue to next test? ☐ YES ☐ NO

Interpretation:

Elastic Broad Jump Ratio: Target = >110, less than or equal to 110, consider fail.

((Triple Broad Jump - Double Broad Jump) / Broad Jump) x 100)

(_____ **–** _____**) / (**_____**) x100 =** _____

Triple Broad Jump — Double Broad Jump — Broad Jump

2-1-2 Energy Storing Ratio:

((Single Limb 2-1-2 Distance - Single-Leg Jump Test/Single-Leg Jump Test)) x 100

271-203/271x100= 33% (That value should be greater than 20%)

(_____ **–** _____**) / (**_____**) x100 =** _____

Single Limb 2-1-2 — Single Limb Hop — Single Limb Hop

2-1-2 Limb Symmetry Index:

Determine which side had a shorter max single leg jump distance and divide it by the other side and multiply by 100

For example, if the left 2-1-2 bound was 130cm and the right was 135cm the equation would be:

(130/135) X 100 = 96.2% (That value should be greater than 95%)

(_____ **/** _____**) x 100=**_____

Shorter Max Jump — Greatest Max Jump

FUNDAMENTAL CAPACITY SCREEN

POSTURAL CONTROL SCORE SHEET

BODYWEIGHT (LBS)	50% BW	25% (EACH HAND)	75% BW	37.5% (EACH HAND)
100	50	25	75	37.5
110	55	27.5	82.5	41.25
120	60	30	90	45
130	65	32.5	97.5	48.75
140	70	35	105	52.5
150	75	37.5	112.5	56.25
160	80	40	120	60
170	85	42.5	127.5	63.75
180	90	45	135	67.5
190	95	47.5	142.5	71.25
200	100	50	150	75
210	105	52.5	157.5	78.75
220	110	55	165	82.5
230	115	57.5	172.5	86.25
240	120	60	180	90
250	125	62.5	187.5	93.75
260	130	65	195	97.5
270	135	67.5	202.5	101.25
280	140	70	210	105
290	145	72.5	217.5	108.75
300	150	75	225	112.5
310	155	77.5	232.5	116.25
320	160	80	240	120
330	165	82.5	247.5	123.75
340	170	85	255	127.5
350	175	87.5	262.5	131.25

Interpretation:

At a minimum, we expect greater than 250 feet for 90 seconds with 75% body weight with good postural integrity.

Calculation of Carry Energy = (Weight Carried x Distance x Time)/Body Weight

(_____ x _____ x _____) / _____ = _____

Weight Carried **Distance** **Time** **Body Weight** **Carry Load**

This data is then compared with norms for age, gender and sport/activity of the individual.

FMS's COPY
FCS DATA COLLECTION

NAME:

FMS's COPY - FCS DATA COLLECTION

SCREEN		RAW SCORE	FINAL SCORE	COMMENTS
DEEP SQUAT				
HURDLE STEP	R			
	L			
INLINE LUNGE	R			
	L			
ANKLE CLEARING - PAIN +/-	R			
	L			
ANKLE CLEARING - MOBILITY R-Y-G	R			
	L			
SHOULDER MOBILITY	R			
	L			
SHOULDER CLEARING +/-	R			
	L			
ACTIVE STRAIGHT-LEG RAISE	R			
	L			
TRUNK STABILITY PUSHUP				
EXTENSION CLEARING	+/-			
ROTARY STABILITY	R			
	L			
FLEXION CLEARING	+/-			
TOTAL SCREEN SCORE				

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		LEFT	RIGHT
	Little (fifth) finger Passive dorsiflexion beyond 90°		
	Thumb Passive dorsiflexion to the flexor aspect of the forearm		
	Elbow Hyperextends beyond 10°		
	Knee Hyperextends beyond 10°		
	Forward flexion of trunk with knees full extended Palms and hands can rest flat on the floor		
	TOTAL / 9		

FMS's COPY - FCS DATA COLLECTION

AGE: GENDER: HEIGHT: WEIGHT (lbs or kg):

SPORT: POSITION:

MOVEMENT CONTROL

MOTOR CONTROL SCREEN	RIGHT	LEFT	TARGET	SYMMETRY
Ankle Clearing (Beyond/Within/Behind Malleolus)			Beyond	
Pain				
Where is it felt?				
Forward Reach				
Wrist Extension Clearing -/+				
Horizontal Adduction Clearing -/+				
Horizontal Reach				
FOOT LENGTH				

EXPLOSIVE CONTROL

POWER CONTROL	MAX DISTANCE (cm)	TARGET RATIO	RATIO
Broad Jump		>100	
Broad Jump Hands on Hips		>120	

SINGLE-LEG JUMP TEST	MAX LEFT (cm)	MAX RIGHT (cm)	TARGET SYMMETRY	% SYMMETRY
Single-Leg Jump			>90%	

IMPACT CONTROL

TRIPLE BROAD JUMP	MAX DISTANCE (cm)	TARGET
Double Broad Jump		
Triple Broad Jump		
Energy Storing Ratio		>110

2-1-2 Bound	MAX LEFT (cm)	MAX RIGHT (cm)	TARGET SYMMETRY	% SYMMETRY
2-1-2 Bound			>90%	

POSTURAL CONTROL

BODY WEIGHT	75% BW	CARRIED	DISTANCE (ft)	TIME (SEC)	CARRY LOAD
		TARGET	250	>90	

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KETTLEBELL HOLD

BOTTOMS UP KB	LEFT WEIGHT	RIGHT WEIGHT
Standing		
Dynamic		
Squat		
Press		

ARM HANGS	TIME (sec)
Extended	
Flexed	

GRIP STRENGTH TESTING

POSITION				
	Flexed	Overhead	Flexed	Overhead
Trial 1 (kg)				
Trial 2 (kg)				
Trial 3 (kg)				
Greatest				
Average				