STRATEGIC FITNESS TRAINING

Exercise Selection Spectrum

The interplay between human movement, health, and performance can be modeled based on a continuum of tissue adaptability to tissue rigidity. This is due to the viscoelastic properties of muscle, and how they impact unrestricted movement and strength/force production, as well as the properties of other connective tissues.

Think about tissues of the human body as Silly Putty. Slow, gentler pull will elongate the Silly Putty. It becomes malleable. Rapid, forceful pulls make it rigid and Silly Putty snaps clean in half. Thankfully, muscles and other tissues don't snap as easily, but they must be rigid when greater force is applied.

At one end of the spectrum, muscles and other tissues, are pliable and can change shape. This tissue won't produce max strength/force, but it will allow greater joint movement and oxygen delivery for energy. This benefits greater mobility, lower rate of energy utilization for sub max effort activity, higher oxygen delivery to tissue, and physical recovery when resting. Most beneficial for many is the increase in freedom of movement that allows comfortable exercise and access to body and limb positions necessary for desirable physical activities. This may be getting your hips lower in a defensive stance in sport or something as simple as a favorable ankle, knee, and hip position to climb stairs pain free.

At the other end of the spectrum muscles are rigid. This tissue adaptation is meant to produce max strength/force. Rigid tissue prevents movement to resist and overcome force, i.e gravity. Resistance training and exercise is in essence work against additional gravity. In fact, at some point additional resistance, and for many people just their body weight, will cause the body to intrinsically increase its rigidity to survive the physical demand. The greater the resistance against gravity the greater the need for rigid tissue to battle it.

Consider how inefficient controlling lots of motion under heavy load is. Maintaining full range of motion at the joints would be incredibly taxing, not to mention impossible, with maximum strength application. Intuitively, anyone who has tried to walk while holding something really heavy knows this. The length of our stride must decrease to a shuffling of our feet to increase force and prevent collapse. The point is that tissue rigidity and limited joint motion is necessary for survival. Obviously, rigid muscle is also very beneficial for greater demands of physical activity and exercise.

As mentioned this is a continuum. Our genetics and physical structure predispose us to a location on this continuum. Thus, some are born with increased movement options, but less strength, while others are born with more natural strength, but less mobility. Plus, there will be people falling at every degree in between the extremes.

Furthermore, our physical activities, exercise execution and plan, injury history, and lifestyle further impact our bias on this continuum. These variables may significantly impact our ability to change position on the spectrum. Simply put, how much/easily you change between being pliable and rigid.

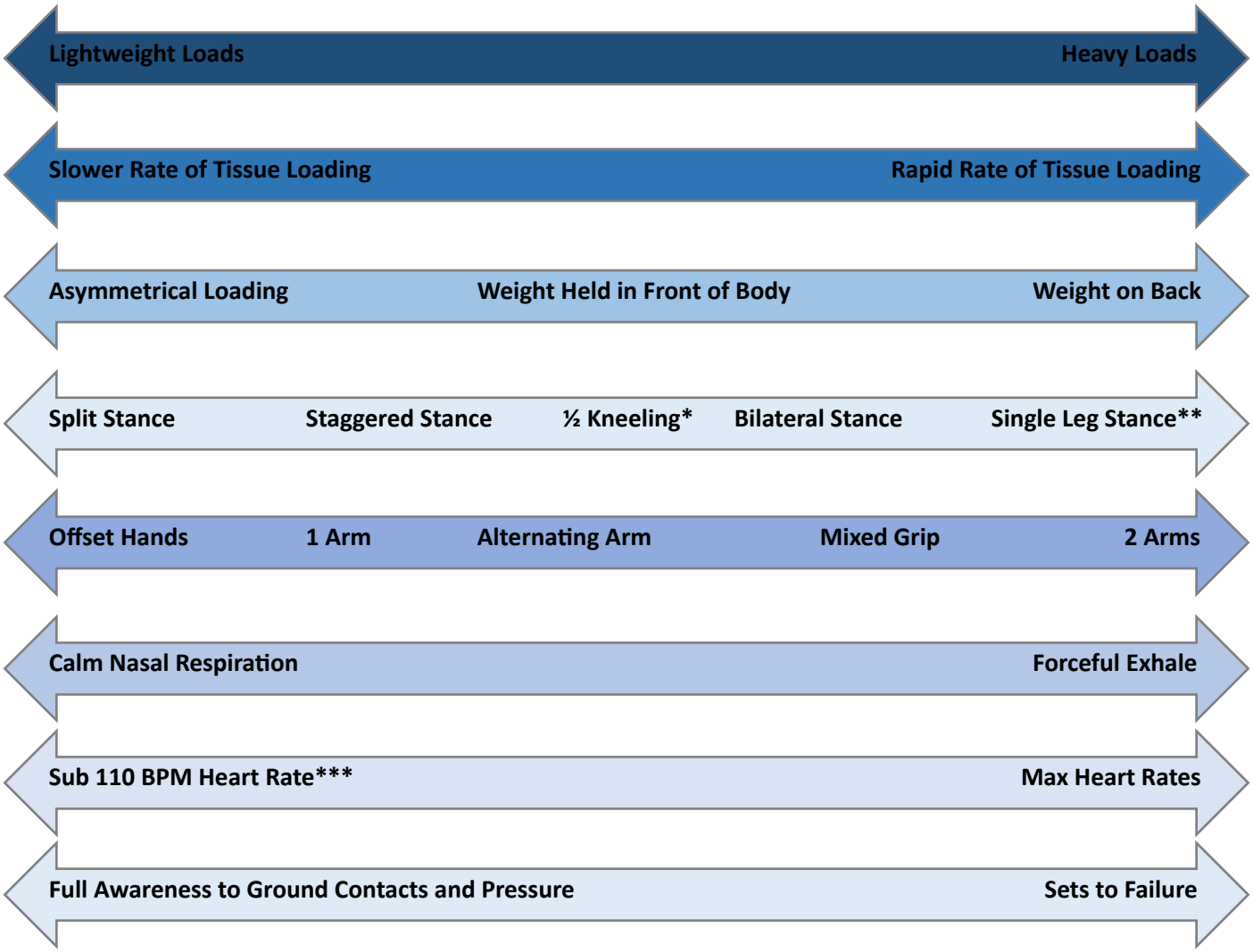
The key is to determine the right blend of muscle adaptability and rigidity you may need. The specific location of more pliable tissue and more rigid tissue is incredibly important for comfortable movement and/or increased performance with exercise, activity, and sport. Your ability to fluctuate, or shift, from one to the other may matter as well.

The example continuum below does not encompass all the elements that may impact the adaptable or rigid response of muscle to exercise. Nor is it an exhaustive list of all exercises that can be used or may be best for you. Rather, the image is meant to give you an idea of the overlapping influences of some common exercise variables. Also, it represents how the selection of many popular exercises influences the continuum of muscle adaptability and rigidity.

Keep in mind, exercise technique is incredibly important. Specific execution is required to make or maintain muscle adaptability/pliability. Otherwise, you will most likely default to your rigid type strategies.

Adaptability/Pliability

Rigidity



▪ Staggered Stance Squat ▪ Arm Bar Variations ▪ Cable Chop Variations ▪ 1 Arm High to Low Cable Press ▪ 1 Arm Cable Pulldown Variations ▪ Staggered Stance 1 Arm Cable Row ▪ Lower Intensity Continuous Aerobic Training	▪ Squat w/ 1 Arm Cable Reach ▪ Split Squat Variations ▪ Step-up Variations ▪ Lunge Variations ▪ Staggered Stance 1 Arm RDL ▪ 1 Arm Bench Press Variations ▪ Push-ups w/ 1 Hand Elevated	▪ Goblet Squat ▪ Squat w/ Low Plate Reach ▪ Zercher Squat ▪ Alternating DB Overhead Press ▪ Alternating DB Bench Press Variations ▪ Bent Over 1 Arm DB Row ▪ Alternating DB Flies ▪ Alternating Cable Pulldown	▪ Safety Bar Squat ▪ Trap Bar Squat ▪ Front Squat ▪ DB Bench ▪ DB Incline Bench ▪ DB Decline Bench ▪ DB Overhead Press ▪ DB Bent Over Row ▪ Seated Cable Lat Pulldown ▪ Seated Cable Row ▪ Push-ups	▪ Barbell Deadlift ▪ Barbell RDL ▪ Barbell Back Squat ▪ Trap Bar Deadlift ▪ 1 Leg SLDL ▪ Barbell Bench ▪ Barbell Incline Bench ▪ Barbell Decline Bench ▪ Barbell Overhead Press ▪ Barbell Bent Over Row ▪ Pull-ups ▪ Chin-ups ▪ High Intensity Interval Training

* “True” hip mobility to achieve ½ Kneel Position actually creates a more rigid skeletal position through the pelvis and spine. Thus, ½ Kneeling Position being more toward the rigid end of the continuum relative to the other asymmetrical stances.

** Single leg stance results in the bones of the pelvis biasing toward “locking” together. Thus, there isn’t the relative joint motion available between bones to have full “true” mobility – motion will be amplified elsewhere, ideally the hip joint (“ball and socket joint”). So, the act of floating one foot off the ground immediately increases rigidity. This fact is what makes single leg stance the extreme end of the spectrum versus bilateral stance exercises. We can still gain/maintain full motion between the pelvic bones with bilateral stance depending on execution, load, etc.

*** This heart rate isn’t an exact threshold for everyone. It is used to indicate lower heart rates during “conditioning” allows greater adaptability/pliability of tissue, thus mobility, relative to high heart rates.

Note: Everyone has a threshold to external resistance increasing rigidity. A certain intensity will bias the physiological response toward rigid no matter the exercise being performed. For instance, split squats can be quite useful to manage muscle adaptability for mobility. However, performing a split squat with a heavy enough external load would increase rigidity and decrease true joint range of motion (The untrained eye perceives the movement as full joint motion; however, individuals create pliability in joints and tissues away from the focal joints as a compensatory strategy - i.e moving through the lower back versus true relative motion at the hip - and/or create torsions through connective tissues such as bones bending.)

Position of the external weight can have a similar effect. We will use split squats as the example again. Someone would automatically increase rigidity by placing a barbell on his back during the exercise. Back musculature, such as the rhomboids and middle trapezius, will shorten on the right and left sides of the thorax. As a result, the individual’s ability to rotate the thorax is reduced. Also, his center of mass is pushed forward resulting in a cascade effect of musculature on the front side of the body to contract harder to push backward. This prevents losing balance and falling forward.

The question with all exercise becomes, *“do I want increased rigidity of the musculature in the areas impacted?”*

Contact me if you have any questions on implementing this information!

Email: info@strategicfitnesstraining.com
Instagram: Strategic_Fitness_Training