

NEURO FORCE1

The Evolution of Human Performance



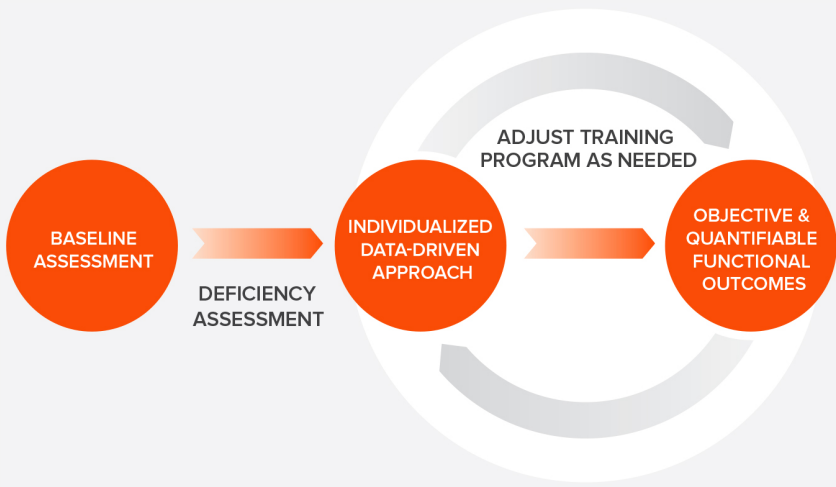
DIAGNOSTIC REPORT



NeuroForce1 is comprised of a data-driven human performance team that utilizes sports science assessment protocols to plot the most optimal course of action towards peak performance.

Once a baseline assessment battery is conducted to understand the individuals starting point going into the strength and conditioning program, an individualized long-term athletic development plan is generated that exploits strengths and targets deficiencies.

Upon the athlete participating in the strength and conditioning program, they are then monitored day-to-day with daily and weekly workloads that will ultimately allow for autoregulation of the programs, to avoid plateaus and suboptimal outcomes.



BASELINE ASSESSMENT

Collect applicable health & performance biomarkers to objectively assess individual strengths & deficiencies.

PROGRAM DEVELOPMENT

Leverage data to develop 100% individualized programs that will exploit strengths & target deficiencies.

OBJECTIVE IMPROVEMENT MONITORING

Objectively quantify improvements both daily and weekly, and adjust protocols as needed to avoid plateaus or potential suboptimal outcome . s

PERFORMANCE PROGRAM FOCUS

NEUROMUSCULAR EFFICIENCY

Utilize NF1 training methodologies that are evidence-informed to create, maintain, or enhance neuromuscular adaptations and overall efficiency through strength and power capabilities, all to advance peak performance.

METABOLIC EFFICIENCY

The ability of the body's metabolic systems to produce adequate and sustainable energy that is necessary to optimize individualized function overall performance.

JOHN DOE

Height: 65 "

Weight: 167 lbs

DOB(Age): 10/07/2019 (4)

Gender: Male

Sport: Basketball



BASELINE ASSESSMENT SUMMARY

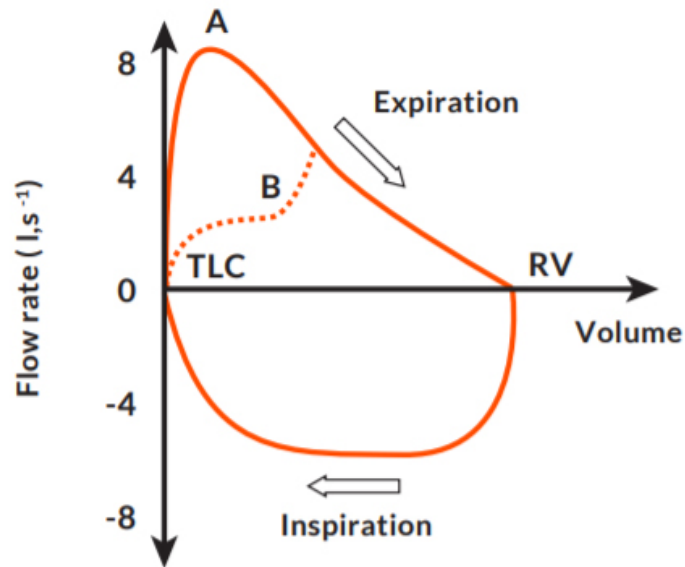
16-Aug-2023

Diagnostic	Biomarker	Classification		
		Suboptimal	Average	Optimal
General	Body Composition			
	Hydration Status			
	Cellular Health			
Functional Systems	Central Nervous System			
	Autonomic Nervous System			
	Stress Resistance			
	Cardiac Systems			
	Energy Supply Systems			
Circulation	Arterial Elasticity			
	Peripheral Elasticity			
	DPI			
Metabolic Efficiency	Metabolism	X		
	Respiratory Quotient			X
	Cardiorespiratory Fitness		X	
	Functional Capacity			
Pulmonary Function	Forced Vital Capacity		X	
	FEV1		X	

PULMONARY FUNCTION

Pulmonary Function Testing (PFT) is an assessment of the health and overall functionality of the lungs. Forced Vital Capacity (FVC) is the total amount of air exhaled in the 6-second effort. FEV1 represents the total air forcefully exhaled in the first second.

The ratio of FEV1/FVC, also known as the Tiffeneau-Pinelli Index, represents a valuable assessment tool for obstructive lung conditions that may limit performance or outcomes.



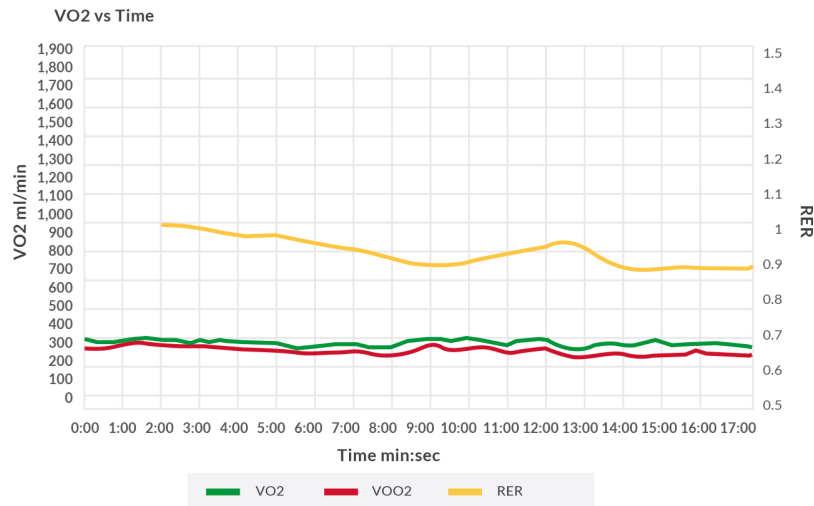
Parameter	Units	Predicted	Obtained	%
FVC	Liters	2.8	2.76	99%
FEV1	Liters	2.65	2.76	104%
FEV1/FVC	%	95	100	N/A

Estimated Lung Age

30

RESTING METABOLISM

Resting Energy Expenditure (REE) is the amount of energy the body needs to maintain its respiratory, digestive and cardiovascular systems and typically accounts for around 60-70% of Total Energy Expenditure (TEE). Respiratory Quotient (RQ) is an objective assessment of carbon dioxide production to oxygen consumption at rest, which allows for a quantitative assessment of substrate utilization or your body's preferred fuel source at rest. In conjunction with REE and your activity, this data is utilized to develop an individualized & data-driven nutrition program.



RESTING ENERGY EXPENDITURE (REE)

Measured	Predicted	Percentage	
1537	2131	72%	
Substrate Utilization		RQ	Fat%
		0.77	30
		CHO%	
		70	

RECOVERY BASICS

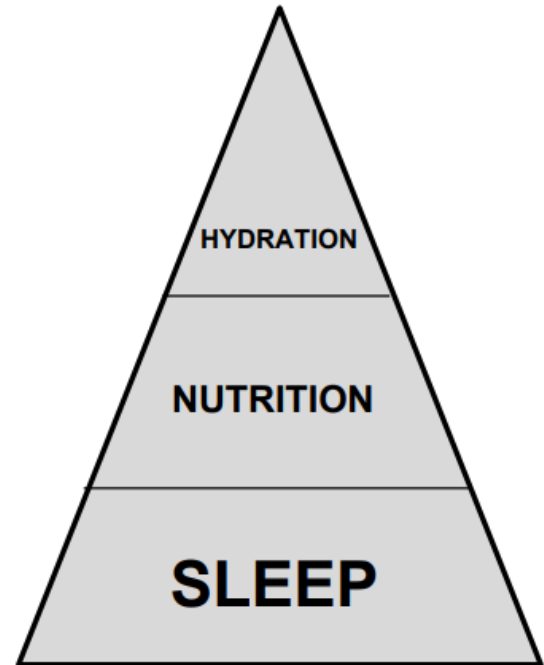
Nutrition:

Based on the results of your baseline resting metabolic rate assessment, these results should be sent to a qualified Registered Dietician (RD/LDN). This way, the following goals have a higher likelihood of success:

Goals:

- Improve body composition, all while preserving lean body mass
- Support optimal performance in technical and nontechnical practice
- Ensure that weight descents are safe, efficient, and minimize any potential performance decrement
- If no weight decent is necessary, then utilizing proper nutrition from a dietician can enhance recoverability, and increase both physiological and performance adaptations

NF1 RECOVERY CONTINUUM



Daily Hydration:

Daily hydration should be individual and based around the athletes relative sweat rate and activity levels.

Athletes should aim to consume around 150% of the amount of weight they lose in pounds in fluid within 6 hours. Realistically, this could look like around ~20-24 ounces of water per pound of body weight lost during training sessions. Electrolytes added as needed, primarily during or around exercise.



RECOVERY BASICS

Sleep:

Sleep is one of the most important pieces of the recovery continuum. With adequate sleep, we can recover from practice, reduce inflammation, increase immune function, increase muscular repair and growth, as well as reduce overall oxidative stress. With less than < 7hrs of sleep, musculoskeletal injury risk can be nearly ~ 1.7x greater than if one is able to sleep for a full 8+ hours. Sleep hygiene is essential to maintain throughout the training process, so avoiding bright lights 30min prior to bed, sleep with a temperature of around ~ 68-72 degrees Fahrenheit, avoid caffeine later in the day, and ensure that you maintain a routine with what time you go to sleep, as well as when you wake up.



HRV / Daily Readiness:

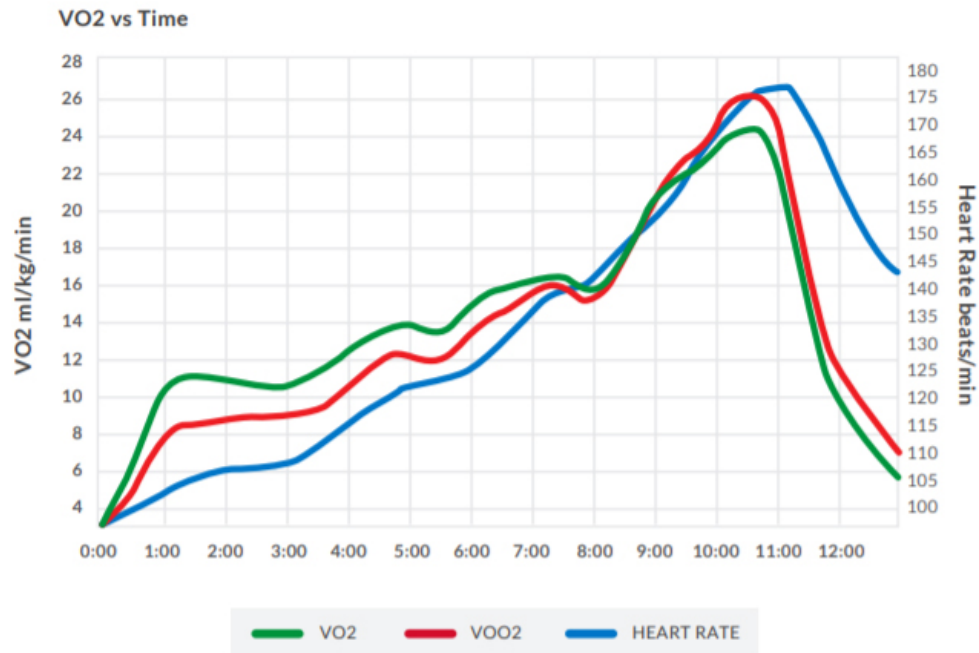
A fatigue monitoring tool that we utilize throughout the training process is daily readiness. This can come in the form of tracking resting heart rate and heart rate variability (HRV) from a wearable device, as well as perceived difficulty of training that day (sRPE). Most commonly, HRV provides insight into the readiness levels of the in-house athletes, as it is a measure of the variability between each heartbeat (R-R intervals). The larger the variability, usually, the better the respective recovery of the athlete. Below is a chart that can be loosely followed if you are tracking your HRV over the course of the time you are training here at NF1. Ideally, you would see a higher value than the one given at the top of your respective age ranges.

*The chart below has estimates of HRV scores based on age, these numbers vary **widely** depending on the individual*

Age	Acceptable Training HRV Range
18-25	>105 – 55
26-30	>93 – 55
31-35	>85 – 47
36-40	>75 – 40
41-45	>65 – 37
46-50	>55 – 35

CARDIORESPIRATORY FITNESS

Cardiorespiratory Fitness testing is an assessment of relative cardiorespiratory efficiency as it pertains to maximal oxygen consumption during vigorous aerobic exercise.



ANAEROBIC THRESHOLD (AT)

Anaerobic threshold marks the point where the cardiorespiratory system is no longer able to deliver adequate oxygen to meet energy production needs in an aerobic capacity, leading lactate accumulation, and eventual fatigue.

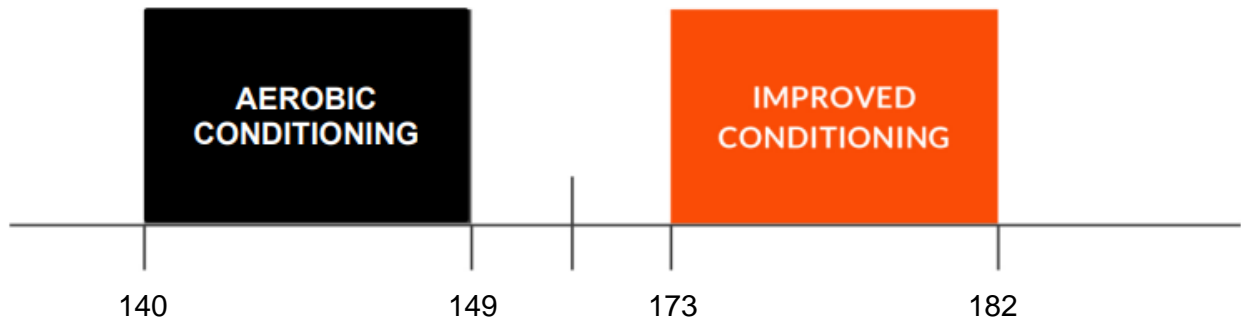
VO₂ MAX

The maximal amount of oxygen that an individual can consume during a graded exercise assessment. Relative VO_{2max} (ml/kg/min) is among the most accurate predictors of cardiovascular & neurodegenerative diseases, and overall health.

Biomarker	Measured
AT	42
VO _{2max}	47
2min – HRR	0

OPTIMAL HEART RATE TRAINING ZONES

Maintaining the optimal training intensity and heart rate will help achieve your health & performance goals in the most efficient manner possible.



Zone	Description	Min HR	Max HR
1	Active Recovery/Warm-Up	132	140
2	Aerobic Conditioning	140	149
3	Tempo	149	165
4	Lactate Threshold Training	165	182
5	Intervals/VO2 Max	182	198



COUNTER MOVEMENT JUMP

A simple, yet reliable jump test used to measure lower body power output via the stretch shortening cycle (SSC). Performance in a countermovement jump has been directly correlated with maximal speed, power, and strength capacity. This assessment provides insight into an individual's training needs, provides feedback on nervous system readiness, and training program efficacy. Scoring sub-optimally (Low-Below Average) in this assessment indicates lower body force production deficiencies and a need for lower body strength and power training.

TRAINING PARAMETERS

Strength:

Perform 3-5 sets of 5-8 repetitions at loads from 70-95% of 1RM. The tempo (pace) of the repetitions should be moderate- fast. Allow for 60-120 seconds of rest between sets. Frequency: 2 - 4x per week, alternating movement patterns each session

Exercise Recommendations: Back Squat, Front Squat, Deadlift, Split Squat

Power:

Perform 4-8 sets of 2-4 repetitions at loads from 30-75% of 1RM. The tempo (pace) of the repetitions should be fast. Allow for 90-180 seconds of rest between sets. Frequency: 2 - 4x per week, alternating movement patterns each session

Exercise Recommendations: Power Clean, Hang Clean, Power Snatch, Speed Squat, Speed Deadlift, Squat Jump, Split Jerk, KB Swing

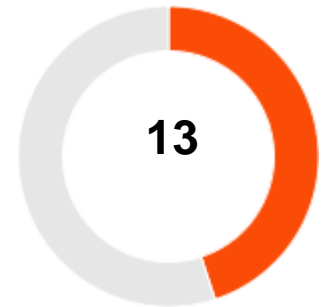
Plyometric:

3-5 sets of 3-10 repetitions at loads from bodyweight to very light. The tempo (pace) of the repetitions should be as fast as possible. Allow for 60-180 seconds rest between sets. Frequency: 2 - 4x per week, alternating movement patterns each session

Exercise Recommendations: Depth Jump, Pogo Jump, Box Jump, Tuck Jump, Drop Jump, Hops, Counter Movement Jump, Lateral Jump, Bound, Broad Jump

Counter Movement Jump

(Jump Height in Inches, ImpMomentum, in)



RECOMMENDATIONS

High = Optimize Concentric RFD, Eccentric RFD, Mechanics

Above Average = Increase Plyometric Training & Power Training Intensity

Average = Increase Plyometric Training & Power Training Frequency

Below Average = Strength Training & Plyometric Training

Low = Strength Training



REACTIVE STRENGTH INDEX - MODIFIED

A jump test is used to assess an individual's reactive jump capacity. This is an effective test for quantifying an individual's elasticity and ability to efficiently utilize the stretch shortening cycle or, in other words, transition from eccentric to concentric (absorb and generate force). Performance in the RSI-M assessment displays an individual's ability to rapidly transition from eccentric to concentric and produce absorb/force in very short time frames. These metrics profile an individual's neuromuscular efficiency as well as explosive capacity. Scoring sub-optimally (Low-Below Average) in this assessment indicates rate of force development, power production, and reactivity deficiencies, as well as a need for lower body strength, power and-or plyometric training.

TRAINING PARAMETERS

Strength:

Perform 3-5 sets of 5-8 repetitions at loads from 70-95% of 1RM. The tempo (pace) of the repetitions should be moderate- fast. Allow for 60-120 seconds of rest between sets. Frequency: 2 - 4x per week, alternating movement patterns each session

Exercise Recommendations: Back Squat, Front Squat, Deadlift, Split Squat, Pull Up, Chin Up, Bent Over Row, Overhead Press, Bench Press, Incline Press, Bodyweight Dip

Power:

Perform 4-8 sets of 2-4 repetitions at loads from 30-75% of 1RM. The tempo (pace) of the repetitions should be fast. Allow for 90-180 seconds of rest between sets. Frequency: 2 - 4x per week, alternating movement patterns each session

Exercise Recommendations: Power Clean, Hang Clean, Power Snatch, Speed Squat, Speed Deadlift, Squat Jump, Split Jerk, KB Swing

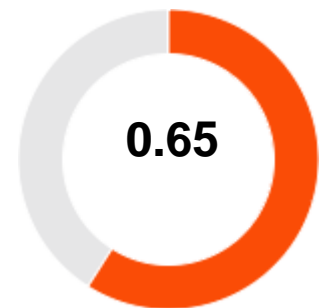
Plyometric:

3-5 sets of 3-10 repetitions at loads from bodyweight to very light. The tempo (pace) of the repetitions should be as fast as possible. Allow for 60-180 seconds rest between sets. Frequency: 2 - 4x per week, alternating movement patterns each session

Exercise Recommendations: Depth Jump, Pogo Jump, Box Jump, Tuck Jump, Drop Jump, Hops, Counter Movement Jump, Lateral Jump, Bound, Broad Jump

RSI-M

(Jump Height / Time to Takeoff)



RECOMMENDATIONS

High = Limited Possibility for RSI Improvements

Above Average = Maintain Power & Plyometric Training

Average = High Intensity Power & Plyometric Training

Below Average = Strength Training & Moderate Intensity Plyometric Training

Low = Strength Training & Low Level Plyometric Training



SQUAT JUMP

Perform 3-5 sets of 5-8 repetitions at loads from 70-95% of 1RM. The tempo (pace) of the repetitions should be moderate-fast. Allow for 60-120 seconds of rest between sets. Frequency: 2 - 4x per week, alternating movement patterns each session

TRAINING PARAMETERS

Strength:

Perform 3-5 sets of 5-8 repetitions at loads from 70-95% of 1RM. The tempo (pace) of the repetitions should be moderate-fast. Allow for 60-120 seconds of rest between sets. Frequency: 2 - 4x per week, alternating movement patterns each session

Exercise Recommendations: Back Squat, Front Squat, Deadlift, Split Squat

Power:

Perform 4-8 sets of 2-4 repetitions at loads from 30-75% of 1RM. The tempo (pace) of the repetitions should be fast. Allow for 90-180 seconds of rest between sets. Frequency: 2 - 4x per week, alternating movement patterns each session

Exercise Recommendations: Power Clean, Hang Clean, Power Snatch, Speed Squat, Speed Deadlift, Squat Jump, Split Jerk, KB Swing

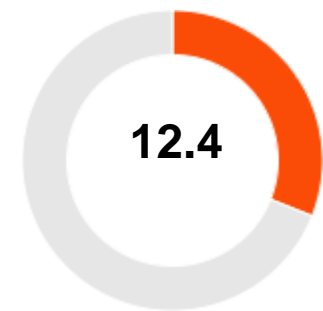
Plyometric:

3-5 sets of 3-10 repetitions at loads from bodyweight to very light. The tempo (pace) of the repetitions should be as fast as possible. Allow for 60-180 seconds rest between sets. Frequency: 2 - 4x per week, alternating movement patterns each session

Exercise Recommendations: Depth Jump, Pogo Jump, Box Jump, Tuck Jump, Drop Jump, Hops, Counter Movement Jump, Lateral Jump, Bound, Broad Jump

SJ

(Jump Height in Inches, Imp-Momentum, in)



RECOMMENDATIONS

High = Optimize Concentric RFD, Eccentric RFD, Mechanics

Above Average = Increase Plyometric Training & Power Training Intensity

Average = Increase Plyometric Training & Power Training Frequency

Below Average = Strength Training & Plyometric Training

Low = Strength Training



ISOMETRIC MID THIGH PULL

A safe and effective assessment of maximal strength capacity, rate of force production, and relative strength levels. The Isometric Mid-Thigh Pull (IMTP) assessment is a safer and more efficient maximal strength testing method than 1RM testing. The data gathered from an IMTP assessment is reliable and very valuable for determining the training needs for an individual and tracking training program efficacy. Scoring sub-optimally (Low-Average) in this assessment indicates insufficient force production capability and low total body relative strength levels. Suboptimal IMTP scores imply a need for total body strength training.

TRAINING PARAMETERS

Strength:

Perform 3-5 sets of 5-8 repetitions at loads from 70-95% of 1RM. The tempo (pace) of the repetitions should be moderate-fast. Allow for 60-120 seconds of rest between sets. Frequency: 2 - 4x per week, alternating movement patterns each session

Exercise Recommendations: Back Squat, Front Squat, Deadlift, Split Squat, Pull Up, Chin Up, Bent Over Row, Overhead Press, Bench Press, Incline Press, Bodyweight Dip

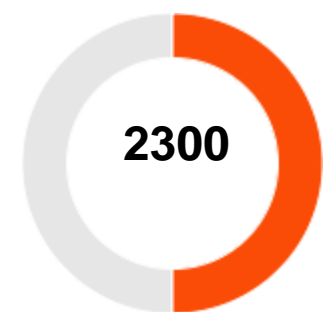
Power:

Perform 4-8 sets of 2-4 repetitions at loads from 30-75% of 1RM. The tempo (pace) of the repetitions should be fast. Allow for 90-180 seconds of rest between sets. Frequency: 2 - 4x per week, alternating movement patterns each session

Exercise Recommendations: Power Clean, Hang Clean, Power Snatch, Speed Squat, Speed Deadlift, Squat Jump, Split Jerk, KB Swing

IMTP

(Peak Vertical Force, N)



RECOMMENDATIONS

High = Optimize RFD

Very Good = Strength Training Maintenance & Weight Management As Needed

Average = Increase Strength Training Intensity & Weight Management

Below Average = Increase Strength Training Volume, Weight Management

Low = Increase Strength Training Frequency, Weight Management



DYNAMIC STRENGTH INDEX

An index that profiles an individual's explosive strength capacity vs. their maximal strength capacity. This test is a combination of two tests, and it helps to determine what percentage of an individual's maximal strength can be accessed during explosive or "short time frame" movements. Performance in this assessment is highly correlated with neuromuscular efficiency and can dictate the specific training stimulus needed for an individual to improve performance most efficiently. Scoring sub-optimally (Low-Moderate) in this assessment indicates neuromuscular inefficiency and unrealized force and power production capabilities. In that event, periodized strength and/or power training methods should be utilized.

TRAINING PARAMETERS

Strength:

Perform 3-5 sets of 5-8 repetitions at loads from 70-95% of 1RM. The tempo (pace) of the repetitions should be moderate- fast. Allow for 60-120 seconds of rest between sets.

Frequency: 2 - 4x per week, alternating movement patterns each session

Exercise Recommendations: : Back Squat, Front Squat, Deadlift, Split Squat, Pull Up, Chin Up, Bent Over Row, Overhead Press, Bench Press, Incline Press, Bodyweight Dip

Power:

Perform 4-8 sets of 2-4 repetitions at loads from 30-75% of 1RM. The tempo (pace) of the repetitions should be fast. Allow for 90-180 seconds of rest between sets. Frequency: 2 - 4x per week, alternating movement patterns each session

Exercise Recommendations:Power Clean, Hang Clean, Power Snatch, Speed Squat, Speed Deadlift, Squat Jump, Split Jerk, KB Swing

DSI

(CMJ Peak Force / IMTP Peak Force)



RECOMMENDATIONS

High = Strength Training

Moderate = Strength Training & Power Training

Low = Implement Strength & Plyometric Training



ECCENTRIC UTILIZATION RATIO – LOWER

An index that profiles an individual's lower body stretch shortening cycle performance vs. their static to dynamic jumping ability. This test is a combination of two tests, and it helps inform the periodization scheme as it relates to athletic development. EURL displays a ratio of the athlete's ability to utilize a pre-stretch movement, as compared to a movement that requires maximal power generation from a static position. Performance in this assessment is highly correlated with neuromuscular efficiency and can dictate the specific training stimulus needed for an individual to improve performance most efficiently. Scoring sub-optimally (LowModerate) in this assessment indicates neuromuscular inefficiency and unrealized force and power production capabilities. In that event, periodized strength and/or power training methods should be utilized.

TRAINING PARAMETERS

Strength:

Perform 3-5 sets of 5-8 repetitions at loads from 70-95% of 1RM. The tempo (pace) of the repetitions should be moderate- fast. Allow for 60-120 seconds of rest between sets.

Frequency: 2 - 4x per week, alternating movement patterns each session

Exercise Recommendations: Back Squat, Front Squat, Deadlift, Split Squat, Pull Up, Chin Up, Bent Over Row, Overhead Press, Bench Press, Incline Press, Bodyweight Dip

Power:

Perform 4-8 sets of 2-4 repetitions at loads from 30-75% of 1RM. The tempo (pace) of the repetitions should be fast. Allow for 90-180 seconds of rest between sets. Frequency: 2 - 4x per week, alternating movement patterns each session

Exercise Recommendations: Power Clean, Hang Clean, Power Snatch, Speed Squat, Speed Deadlift, Squat Jump, Split Jerk, KB Swing

Plyometric:

3-5 sets of 3-10 repetitions at loads from bodyweight to very light. The tempo (pace) of the repetitions should be as fast as possible. Allow for 60-180 seconds rest between sets.

Frequency: 2 - 4x per week, alternating movement patterns each session

Exercise Recommendations: Depth Jump, Pogo Jump, Box Jump, Tuck Jump, Drop Jump, Hops, Counter Movement Jump, Lateral Jump, Bound, Broad Jump

EURL

(CMJ Jump Height, in / SJ Jump Height, in)



RECOMMENDATIONS

Excellent = Optimize Upper Body Power Production

Above Average = Maintain Strength Training Intensity

Average = Increase Strength Training Intensity
Below Average = Increase Strength Training Frequency & Volume

Poor = Increased Strength Training Frequency



MAXIMUM PULL UP

An efficient and reliable assessment of upper body strength and strength endurance. The scoring in this assessment isn't solely based upon the number of pull ups performed but also accounts for an individual's body mass (lb/kg). Factoring in the weight of an individual relative to repetitions performed provides insight into an individual's relative strength. Most assessments utilize measures of absolute strength, although helpful at times, absolute strength measures fail to account for an individual's strength levels relative to their body mass. Assessing relative strength is a much more useful and reliable way to address the specific strength and conditioning needs of an individual as it represents the amount of strength an individual has or work they can perform per lb/kg of bodyweight. Scoring sub-optimally in this assessment indicates low levels of relative strength and the need for upper body strength training and/or loss of body weight.

TRAINING PARAMETERS

Strength Training:

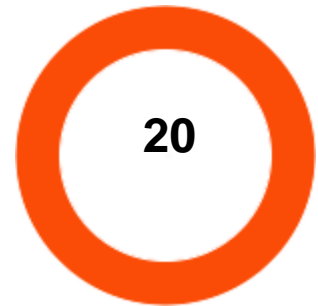
Perform 3-5 sets of 5-8 repetitions at loads from 70-95% of 1RM. The tempo (pace) of the repetitions should be moderate- fast. Allow for 60-120 seconds of rest between sets.

Frequency: 2 - 4x per week, alternating movement patterns each session

Exercise Recommendations: Pull Up, Chin Up, Push Up, Bench Press, Incline Press, Bent Over Row, Inverted Row, Overhead Press, Bodyweight Dip

MPU

(Repetitions in a row)



RECOMMENDATIONS

Excellent = Optimize Upper Body Power Production

Above Average = Maintain Strength Training Intensity

Average = Increase Strength Training Intensity

Below Average = Increase Strength Training Frequency & Volume

Poor = Increased Strength Training Frequency



MAX ALACTIC POWER

The Maximal Alactic Power (MAP) assessment is a reliable assessment that showcases the total-body short-term power production abilities of the anaerobic energy system. This assessment can showcase maximal power outputs over a short period of time, which, in application, is similar to an individual's ability to perform maximal striking, grappling, or escapes, all as quickly as possible.

TRAINING PARAMETERS

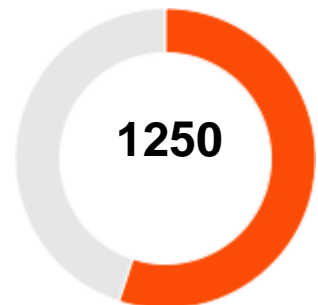
Conditioning:

Perform 1-4 sets of 5-12 repetitions of 10-30 seconds of high intensity work on a piece of conditioning equipment, all with a work to rest ratio of around ~1:4. For example, 10 seconds of work, 40 seconds of rest, performed 1-3x in a session. Frequency: 2 - 4x per week, depending on score

Exercise Recommendations: Air/Assault Bike, Sprint, Versa Climber

MAP

(Peak Power, W)



RECOMMENDATIONS

High = Continue previous training

Above Average = Maintain Peak Output Abilities

Average = Implement High Intensity Anaerobic Training Weekly

Below Average = Implement High Intensity Anaerobic Multiple Times Per Week

Low = Prioritize Anaerobic Power Training

PROGRAM PERFORMANCE SUMMARY

FITNESS	
Biomarker	Measured
AT	42
VO2max	47
2min – HRR	0

TRAINING ZONES			
Zone	Description	Min HR	Max HR
1	Active Recovery/Warm-Up	0	140
2	Aerobic Conditioning	140	149
3	Tempo	149	165
4	Lactate Threshold Training	165	182
5	Intervals/VO2 Max	182	47

METABOLISM			
RESTING ENERGY EXPENDITURE (REE)			
Measured	Predicted	Percentage	
1537	2131	72%	
Substrate Utilization		RQ	Fat% CHO%
		0.77	30 70

PERFORMANCE		
Assessment	Score	Category
COUNTER MOVEMENT JUMP	45	
REACTIVE STRENGTH INDEX - MODIFIED	59	
SQUAT JUMP	45	
ISOMETRIC MID THIGH PULL	50	
DYNAMIC STRENGTH INDEX	100	
ECCENTRIC UTILIZATION RATIO – LOWER	100	
MAXIMUM PULL UP	100	
MAX ALACTIC POWER	55	