



2019 NSCA PERSONAL TRAINERS VIRTUAL CONFERENCE

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#NSCAPT19

Power Training for the Altered Athlete

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Conflict of Interest Statement

**I have no actual or potential conflict of interest
in relation to this presentation.**

POWER TRAINING FOR THE ALTERED ATHLETE

**HOW TO MAXIMIZE POWER AND
MAINTAIN JOINT INTEGRITY**



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Power Training for the Altered Athlete

WHAT TO EXPECT

- **PREVALENCE OF THE ALTERED ATHLETE**
- **ANATOMICAL CONSIDERATION**
- **SPORT BY SPORT DEMAND**
- **RISK STRATIFICATION**
- **PROGRAMMING**

WHO IS THE ALTERED ATHLETE

ANY INDIVIDUAL WITH
PRIOR INJURY,
CONDITION, OR
MOVEMENT BIASED THAT
NECESSITATES UNIQUE
PROGRAMMING

A LARGE PORTION OF OUR
ATHLETES ARE “ALTERED
ATHLETES”

PREVALENCE OF INJURY

More than 3.5 million children ages 14 and younger get hurt annually playing sports or participating in recreational activities

*courtesy of Stanford Children's Hospital

An estimated 2.9 million injuries annually—just over a third of all injuries—occurred at a "sports facility, athletic field, or playground."

*courtesy of APTA



RANGE OF MOTION

EXERCISE SUPERIORITY IS SPECIFIC TO THE ATHLETE

NOT ALL RANGES ARE CREATED EQUAL

EMPOWER INDIVIDUALITY

Joint and movement	n ^a	Median (10 th -90 th percentile) JROM (°)	Normal JROM (°) ^b
Predominantly affected joint movements			
Shoulder flexion	108	119 (90-153)	150-180
Shoulder abduction	117	98 (75-130)	180
Hip flexion, knee bent	105	110 (85-130)	100-120
Hip extension	96	0 (-25 to 20)	20-30
Hip internal rotation	78	25 (10-40)	40-45
Other joint movements			
Wrist flexion	109	55 (30-75)	60-80
Wrist extension	116	30 (8-64)	60-70
Shoulder internal rotation	83	57 (36-85)	70-90
Shoulder external rotation	85	61 (30-85)	90
Shoulder extension	81	54 (35-73)	50-60
Elbow flexion	107	135 (110-150)	140-150
Elbow extension	106	-27 (-51 to 10)	0-10
Hip abduction	91	33 (20-46)	40
Hip adduction	44	20 (13-30)	20
Hip external rotation	79	32 (23-61)	45-50
Knee flexion	105	130 (105-145)	150
Knee extension	101	-10 (-25 to 5)	0-10
Ankle dorsal extension	85	4 (-15 to 20)	20
Ankle plantar flexion	45	41 (20-50)	40-50

^aNumber of patients for whom data were available on that variable. ^bNormal ranges of joint motion are defined according to a combination of the criteria developed by the American Medical Association (AMA) and the American Association of Orthopedic Surgeons (AAOS).^{22,23}

SPORT BY SPORT CONSIDERATIONS

SPORT	FOOTBALL	SOCCER	BASKETBALL	BASEBALL/ SOFTBALL	TENNIS	HOCKEY
GROUND IMPACT	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH
PHYSICAL CONTACT	HIGH	MEDIUM	MEDIUM	LOW	LOW	HIGH
MULTI DIRECTIONAL	HIGH	HIGH	HIGH	MEDIUM	MEDIUM	HIGH
OVERHEAD	LOW	LOW	MEDIUM	HIGH	HIGH	LOW

ANATOMICAL CONSIDERATIONS

- GLENOHUMERAL
- SCAPULOTHORACIC
- LUMBOPELVIC
- ACETABULAR
FEMORAL
- KNEE COMPLEX
- ANKLE COMPLEX



RISK VS. REWARD



- VECTORS
- SPINAL POSITION
- POINT OF ECCENTRIC PEAK
- FIXED VS. NON-FIXED
- CONTROL
- RANGE OF MOTION

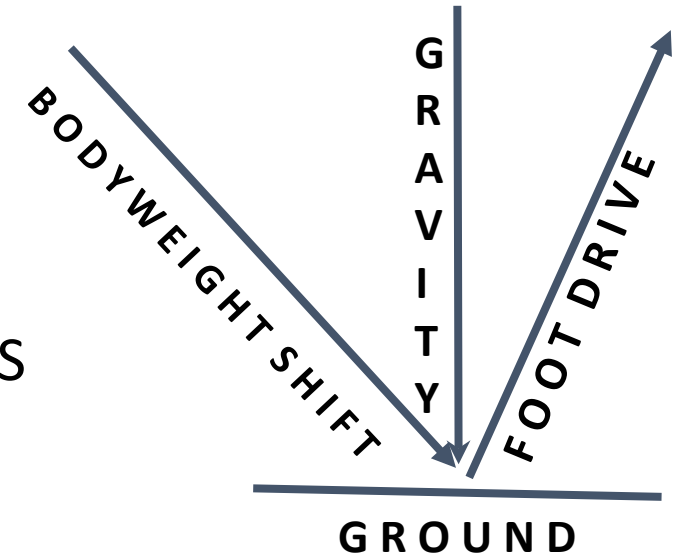
VECTORS

LINE OF PULL MATTERS

LOCOMOTIVE ADJUSTMENTS

FOOT TO HAND DRIVE

BONE STACKING

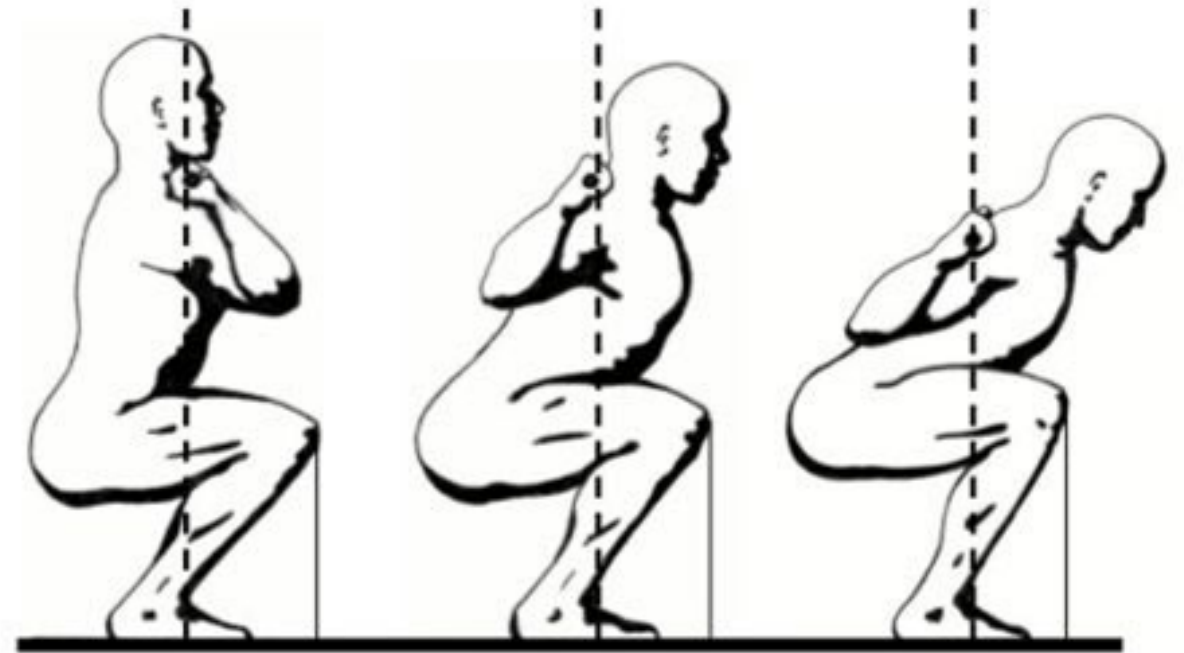


SPINAL POSITION

LOAD DICTATES
ADJUSTMENTS

SHEARING, FLEXION,
ROTATION

GRAVITY VS DIRECTIONAL



POINT OF ECCENTRIC PEAK

- ALTERING THE POINT OF RISK FROM THE BEGINNING, NOT THE END
- AVOID FEAR BASED SUCCESS



FIXED VS. NON-FIXED

BILATERAL VS.
UNILATERAL

CREATE JOINT
FREEDOM

LOAD AMPLIFIES
SINGLE LINK
ADJUSTMENTS



CONTROL

MUSCULAR POWER VS. LIMITATION RESPONSE

PROPRIOCEPTION



HOW TO SET THE ATHLETE UP FOR SUCCESS



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CONTROL THE BOUNDARIES

NOT EVERYONE SHOULD BE PLAYING ON THE
“SAME FIELD”

THE PROGRAM PREP IS THE PIECE OF THE
SPORT WE CAN CONTROL



SPORT SPECIFIC HAPPENS ON THE FIELD *NOT IN THE WEIGHT ROOM*

MIMICKING MOVEMENTS CAN BE MINIMIZED IN THESE
SCENARIOS

- BUILD STRENGTH
- BUILD CAPACITY
- BUILD STAMINA
- BUILD TENACITY



INDIVIDUALIZE

NO SUCH THING AS
COOKIE CUTTER

NO SUCH THING AS A
REQUIRED LIFT



REPS AND SETS ARE REPS AND SETS

PROGRAMMING WILL REMAIN THE SAME

VOLUME AND MUSCULAR REPETITION WILL BE ADJUSTED

- 5x5 would consist of 3 ramping sets to 2 work sets rather than 5 work sets*

CLIENT					CLIENT				
General Warm-Up		MOBILITY			General Warm-Up		MOBILITY		
Duration:					Duration:				
SESSION 2		WK 1			SESSION 2		WK 1		
PULL	Sets	Reps	WT	NOTES	PULL	Sets	Reps	WT	NOTES
	3	10-12				3	10-12		
Rest: 90s					Rest: 90s				
	3	10-12				3	10-12		
Rest: 90s					Rest: 90s				
	3	10-12				3	10-12		
Rest: 90s					Rest: 90s				
	3	10-12				3	10-12		
Rest: 60s					Rest: 60s				
	3	10-12				3	10-12		
Rest: 60s					Rest: 60s				
CORE					CORE				
	3	12/45s				3	12/45s		
Rest: 90s					Rest: 90s				

MANAGE JOINT DEMAND

- FOCUS ON MOVES, NOT MODALITY
- CREATE BOUNDARIES SPECIFIC TO THE INDIVIDUAL
- LIMIT RISK BY LIMITING UNNECESSARY REPS OR MOVES



ANY QUESTIONS



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