NSCA®

2022 NSCA PERSONAL TRAINERS

VIRTUAL CONFERENCE

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CONFLICT OF INTEREST STATEMENT

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

Monitoring Load & Fatigue in Personal Training

We are here to make a change in our clients journey!

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“Proper preparation prevents poor performance” James Baker

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Benefits of Monitoring Load

A scientific understanding…

- Explaining changes in performance
- Increase the understanding of training responses
- Revealing fatigue and valuing the need for recovery
- Informing the plan and modifications of a training program calendar
- Ensuring appropriate levels of load to minimize the risk of non-functional over-reaching, injury, and/or illness

What is load?

Training and non-training burdens (single or multiple) that is applied to a human biological system.

Training
Life
Competition?

What impacts load?

Age

Sex

Fitness

Fatigue

Health

Psychological

Metabolic

Hormonal

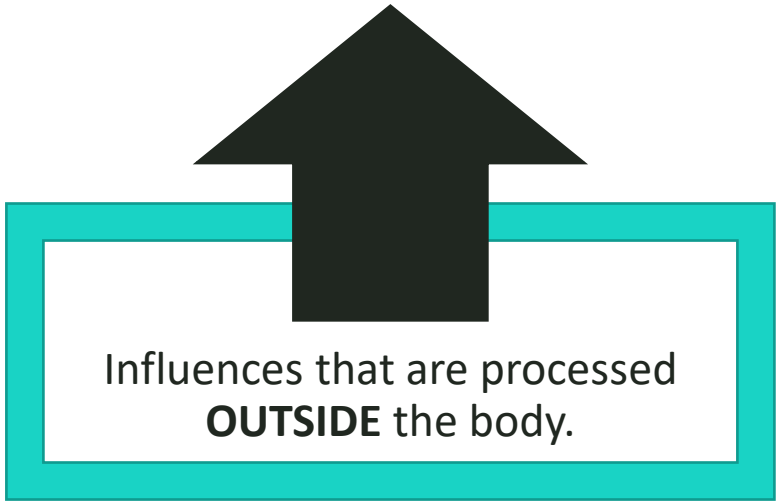
Genetics

Sport?

How can we monitor load?

External Load

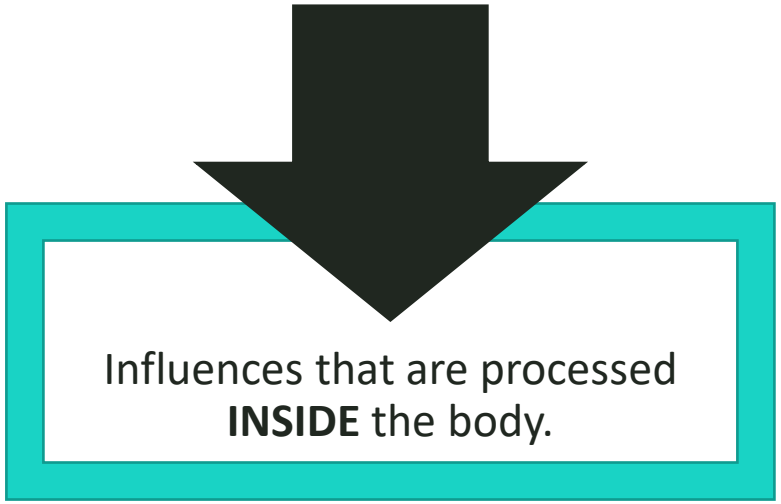
Quantifying an external stimulus applied to the client that is independent of the internal load.



How can we monitor load?

Internal Load

Physiological and psychological responses in clients biological and environmental factors.



How can we monitor load?

Internal Load

Cognitive

Musculoskeletal

Metabolic

Cardiovascular

Neuromuscular

LOAD TYPE	EXAMPLES
External Load	Training or competition time (e.g., seconds, minutes, hours, or days)
	Training or competitions frequency (e.g., sessions or competitions per day, week, or month)
	Type of training or competition
	Time-motion analysis (e.g., global positioning systems)
	Power output, speed, and acceleration
	Neuromuscular function (e.g., jump test, isokinetic dynamometry, and plyometric push)
	Movement repetitions (e.g., pitch, throws, bowls, serves, jump, or foot contact)
	Distance (e.g., kilometers ran, cycled, or swam)
	Acute:chronic workload ratio
Internal Load	Perception of effort (e.g., rate of perceived exertion [RPE])
	Session rating of perceived effort (e.g., session duration (min) x RPE)
	Psychological inventories
	Sleep (e.g., quality and quantity)
	Biochemical/hormonal/immunological assessments
	Psychomotor speed
	Heart rate (HR)
	HR to RPE ratio
	Heart rate recovery (HRR)
	Hear rate variability (HRV)
	Training impulse (TRIMP)
	Blood lactate concentration
	Blood lactate to RPE ratio

Soligard et al, 2016; Bartz et al, 2021

External Load

Influences that are processed outside the body

- Training or competition time
  - e.g., seconds, minutes, hours, or days
- Training or competition frequency
  - e.g., sessions or competitions per day, week, or month
- Type of training or competition
- Time-motion analysis
  - e.g., global positioning systems
- Power output, speed, and acceleration
- Neuromuscular function
  - e.g., jump test, isokinetic dynamometry, and plyometric push
- Movement repetitions
  - e.g., pitch, throws, bowls, serves, jumps, or foot contact
- Distance
  - e.g., kilometers ran, cycled, or swam
- Acute:chronic workload ratio

Think outside of the box with your clients!

- OCCUPATION!
- SOCIAL LIFE!
- Recreational activity
  - Golf
  - Pickle Ball
  - Basketball
  - Hiking
- Family life
- House work
  - Inside or outside
- Travel
  - Sitting!

Internal Load

Influences that are processed inside the body

- Perception of effort
  - e.g., rate of perceived exertion [RPE]
- Session rating of perceived effort
  - e.g., session duration (min) x RPE
- Psychological inventories
  - e.g., profile of mood state (POMS), recovery-stress questionnaire for athletes (REST-Q-Sport), total recovery scale (TQR), state trait anxiety inventory (STAI)
- Sleep
  - e.g., quality and quantity
- Biochemical/hormonal/immunological assessments
- Psychomotor speed
- Heart rate (HR)
- HR to RPE ratio
- Heart rate recovery (HRR)
- Heart rate variability (HRV)
- Training impulse (TRIMP)
- Blood lactate concentration
- Blood lactate to RPE ratio

What do you use?

Select appropriate load types!

EXPLORE | OBTAIN | APPLY

Client

Goals

Time

Access

Price

TRAIN SMART!

Poorly managed training programs can increase risk of injury through a variety of mechanism via the tissue or whole-client status.

THANK YOU!

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References

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