

DETRAINING IN TENNIS

FIELD-BASED LEARNINGS, IDEAS AND APPLICATIONS



QUICK INTRO

ABOUT ME

- Exercise Sci & Rehab at CSU Bathurst
- Honours research - Alcohol/Sleep dep
- PhD “Athlete Preparation for Elite Tennis” - Melbourne
- S&C / Academy Manager - Adelaide
- S&C / Wheelchair Lead - Sydney
- Performance Science Lead / S&C - Brisbane



AIMS FOR TODAY

- What is detraining?
- How does detraining affect athletes?
- Introduce demands of tennis
- Physical capacity focus
- Life on the tour
- Tennis research
- Field-based techniques / ideas



AUSTRALIAN OPEN

'Not normal': Worst quarantine fears realised as Aus Open struck by injury crisis

Source: Fox Sports News Australia



Swimming World Magazine

Why Detraining Is At The Heart Of The Swimming Playbook In Covid-19 Season 2020

Forced lockdown during COVID-19 has brought detraining into sharp focus as swimmers, coaches and programs make their way back to water ...

12 June 2020



The New Indian Express

COVID-19 lockdown: Lack of training may cause health problems, says Sports Authority of India

Improper detraining can affect their cardiovascular system, even weaken their immune system. But if it's only for three weeks, then it will be easier ...

28 Mar 2020



PezCycling News

(De)training in a Pandemic

Like PEZ? Why not subscribe to our weekly newsletter to receive updates and reminders on what's cool in road cycling? corona virus covid-19 ...

31 Mar 2020



Deutsche Welle

Coronavirus has Olympic athletes 'running on the spot' — sports scientist

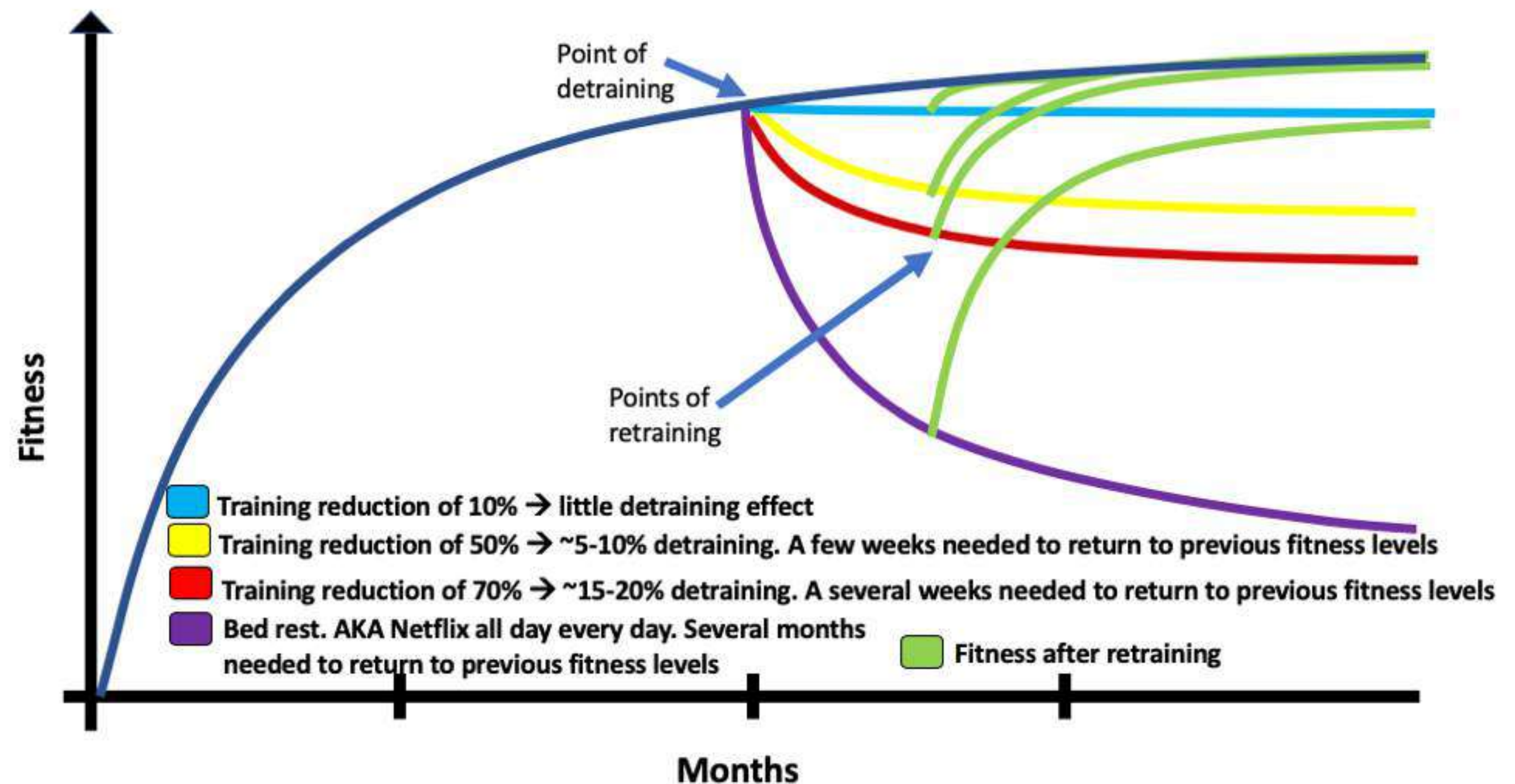
Most studies, so-called detraining studies, investigate time periods of two to six weeks, sometimes longer. They show a rapid decrease in ...

22 Mar 2020

WHAT IS DETRAINING

HOW DOES IT AFFECT ATHLETES

- A partial or complete loss of training-induced anatomical, physiological and performance adaptations
- Will affect all training capacities of an athlete, although at differing rate
- Pre-cessation state, cessation intensity, and cessation duration will all impact the level of athlete detraining



WHEN CAN DETRAINING OCCUR

Off-season

Injury

Heavy and sustained competition periods

Planned or unplanned reductions in training volume or intensity

Poorly planned training blocks



CAPACITY DETRAINING

What happens to athletes?

Decrease in capillary density

Arterial-venous oxygen difference decline

Reductions in oxidative enzymes
impacting ATP production

Reduction in VO2 Max

Muscle fibre cross-sectional area decline

Force production is reduced

Detraining

How long does an athlete's trained abilities last? It varies, but here are some guidelines to give you an idea.

Aerobic Endurance ~ 3-4 weeks

Maximal Strength ~ 3-4 weeks

Anaerobic Endurance ~ 2-3 weeks

Strength Endurance ~ 10-20 days

Alactic Endurance ~ 3-7 days

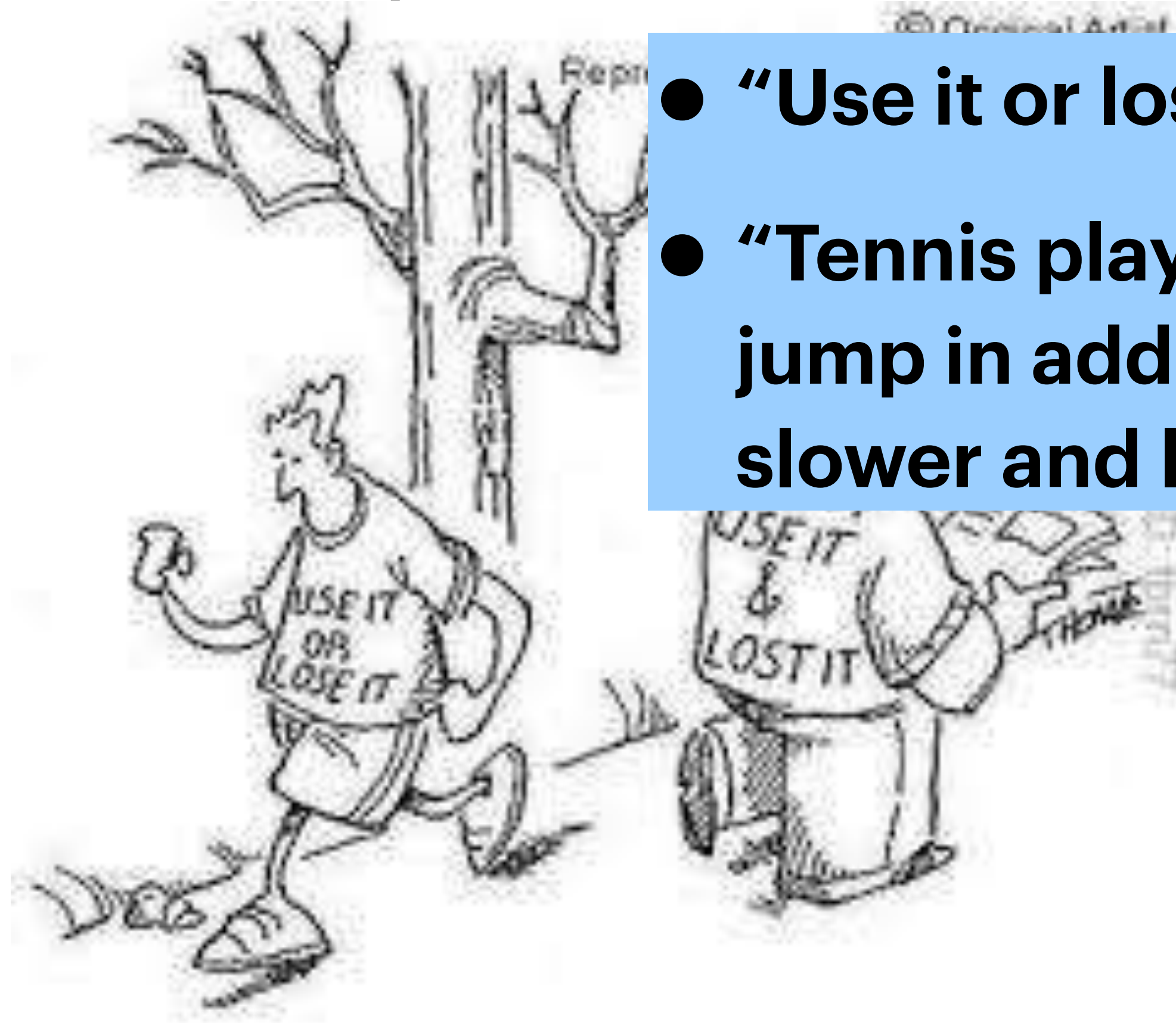
Speed ~ 2-7 days

PRINCIPLES BEHIND DETRAINING

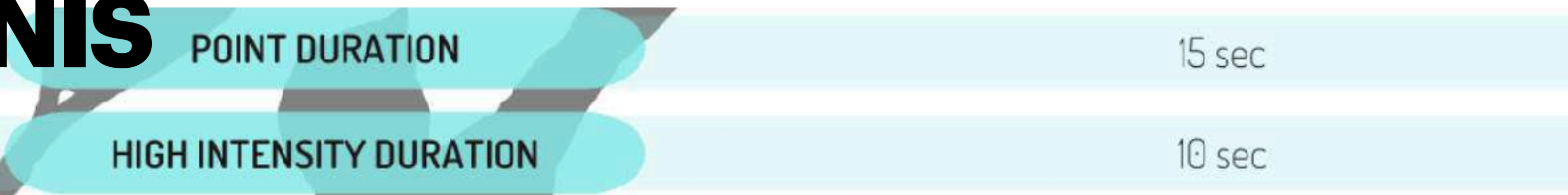
Reversibility

Specificity - SAID

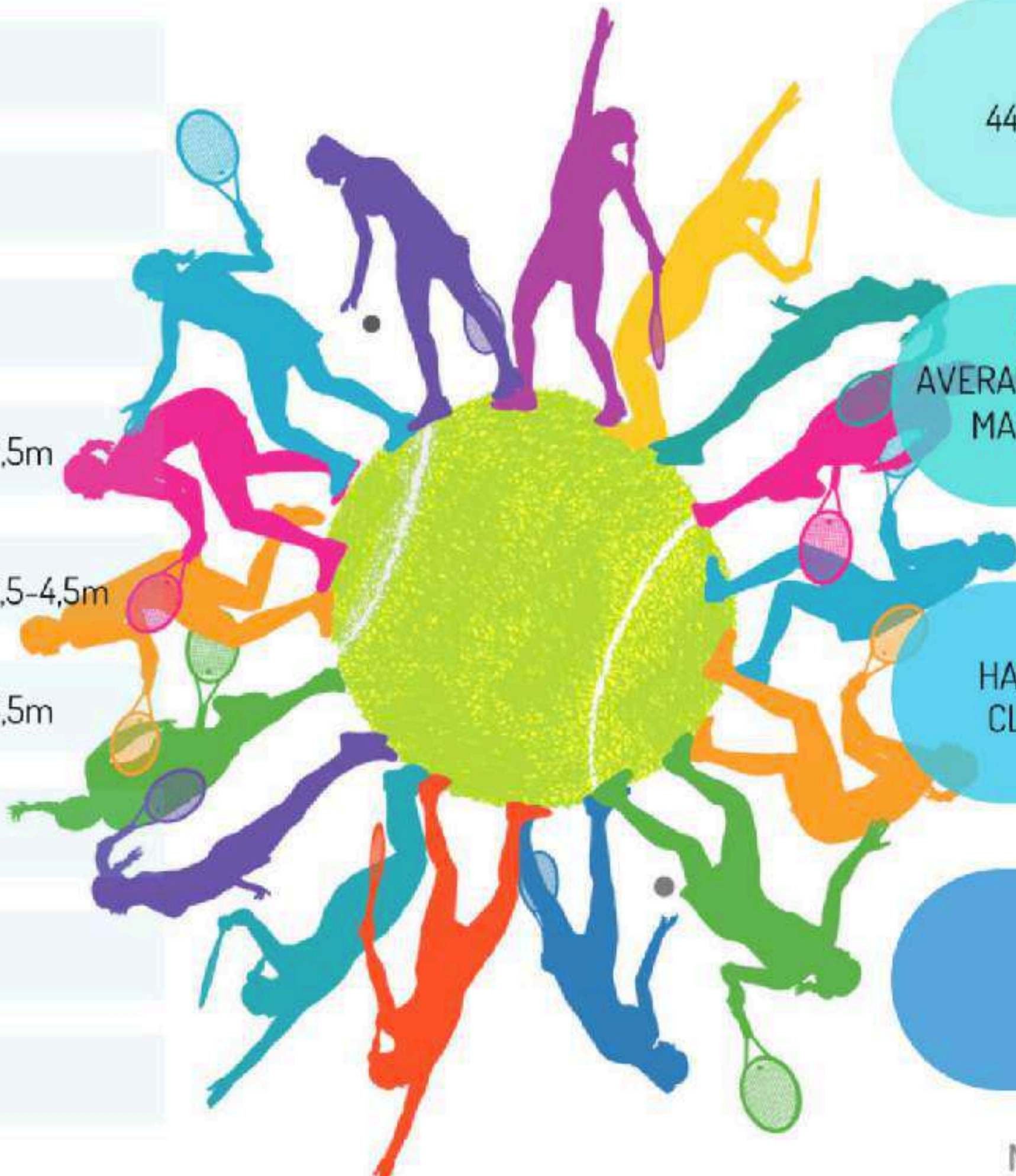
- “Use it or lose it”
- “Tennis players who don't sprint or jump in addition to tennis, get slower and less powerful”



WHAT DOES TENNIS LOOK LIKE?



REST BETWEEN POINTS	20 sec
REST BETWEEN GAMES	60-90 sec
REST BETWEEN SETS	120-150 sec
STANDING STROKES	in 80% less than 2,5m
SLIDING STROKES	in 10% less than 2,5-4,5m
RUNNING STROKES	in 5% more than 4,5m
PLAYING TIME (ATTACKING)	21%
PLAYING TIME (ALL COURT)	28,60%
PLAYING TIME (BASELINER)	38,50%



V02 MAX
44-69 ml/kg/min

HEART RATE
AVERAGE 145 bpm ± 13 bpm
MAXIMAL 180 + bpm

LACTATE
HARD 1,7-3,8 mmol
CLAY 3,8-6 mmol

EFFORTS
> 6 m/s = 5
> 8 m/s = 10

200m
7
5%]
30%]

WHAT DOES TENNIS LOOK LIKE?

REALITY OF LIFE ON THE TOUR

- 15-25h technical training, 12-15h physical preparation / week - Training week
- Upwards of 35 tournaments (up to 100 singles matches) per calendar year
- Different city / country each week
- Not uncommon for players outside top 50 in World to *lose* money annually from travel expenses



WHAT DOES TENNIS LOOK LIKE?

TOURNAMENT SCHEDULES

Unknown tour entry

Tour length

Prize money / point uncertainty

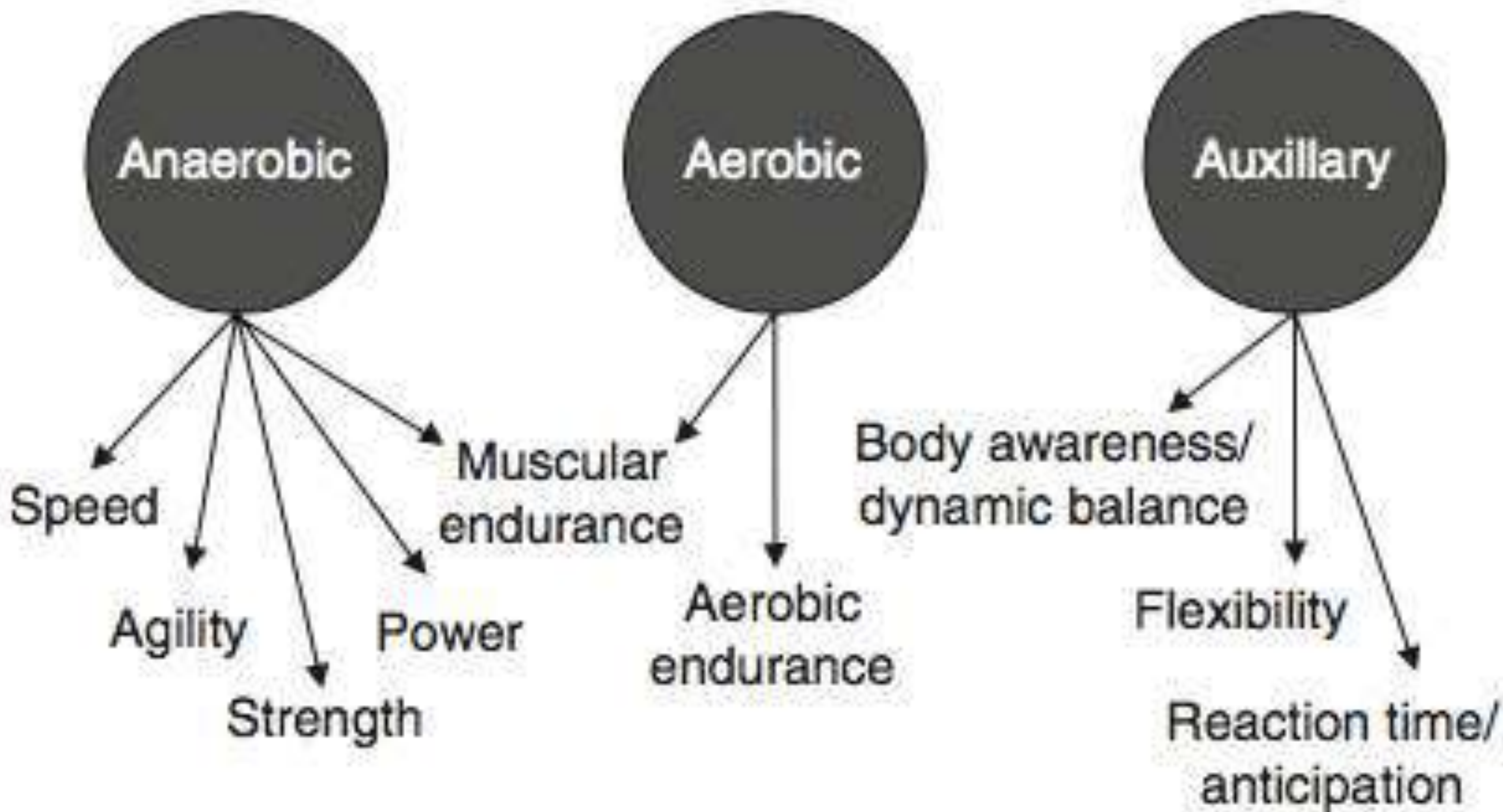
Lose singles > doubles

Lose and leave

Unknown training environments



Physical components



CAPACITY DETRAINING

What types of capacities detraining quickest in TENNIS - PhD findings

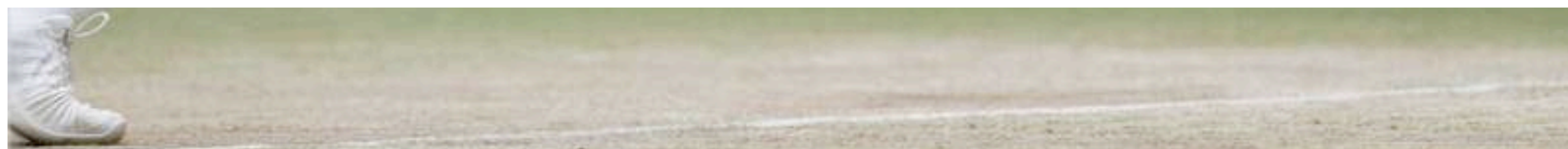


International Journal of Sports Physiology and Performance, 2015, 10, 253-260
<http://dx.doi.org/10.1123/ijsp.2014-0038>
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The Relationship of Training Load to Physical-Capacity Changes During International Tours in High-Performance Junior Tennis Players

Looking at % change trends for each measure revealed:

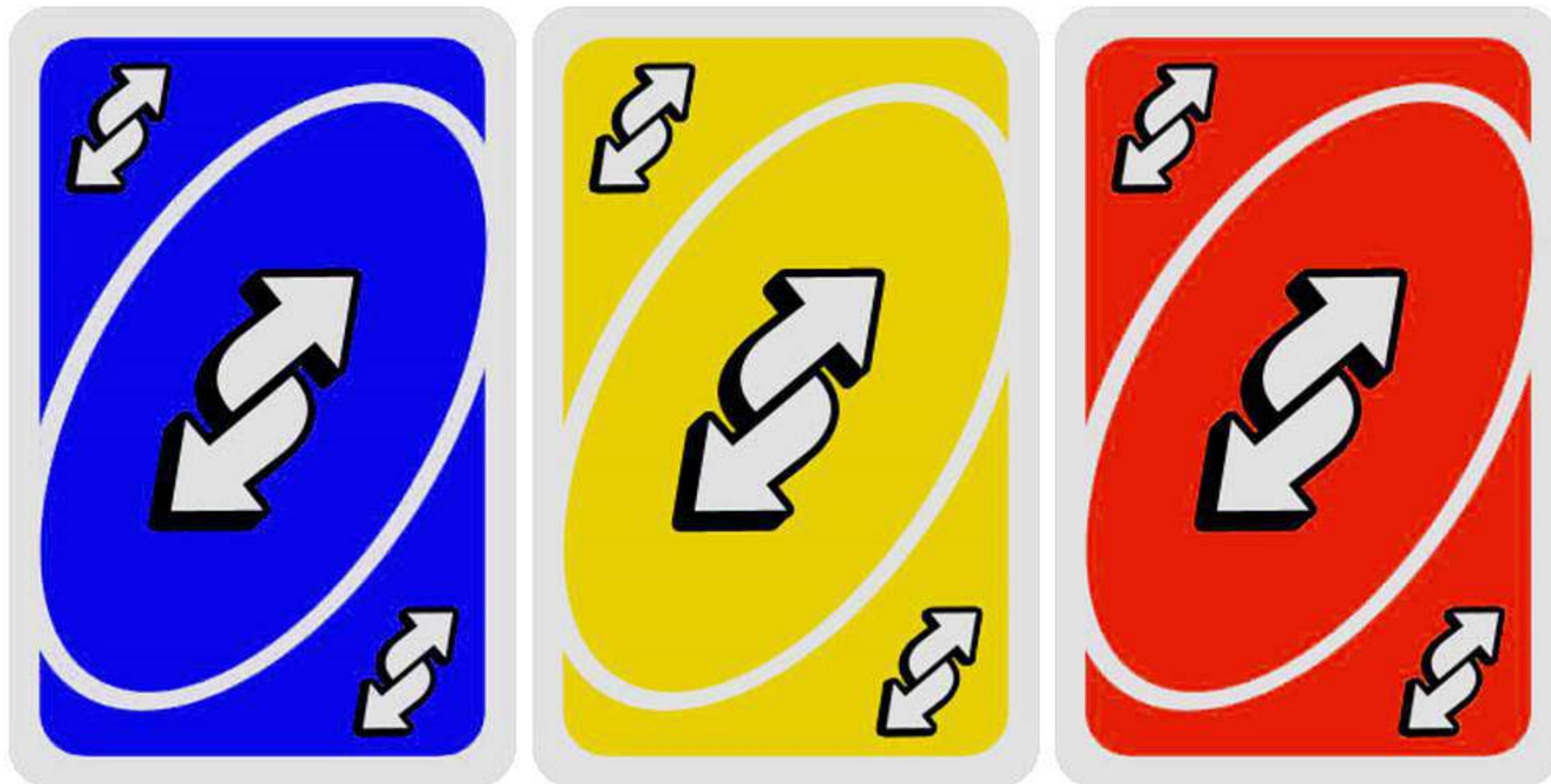
- 0.3% increase in body mass
- 2.0% decrease in double leg VJ; 1.8% decrease in left leg VJ; 3.6% decrease in right leg VJ
- 3.6% slower 5m sprint time; 3.3% slower 10m sprint time; 2.2% slower 20m sprint time
- 1.5% slower 505 left time; 0.9% slower 505 right time
- 1.9% decrease in 20m shuttle test level/shuttle; 3.4% increase in repeat speed ability (RSA) total time



INJURY RISK VS. PERFORMANCE DECLINE

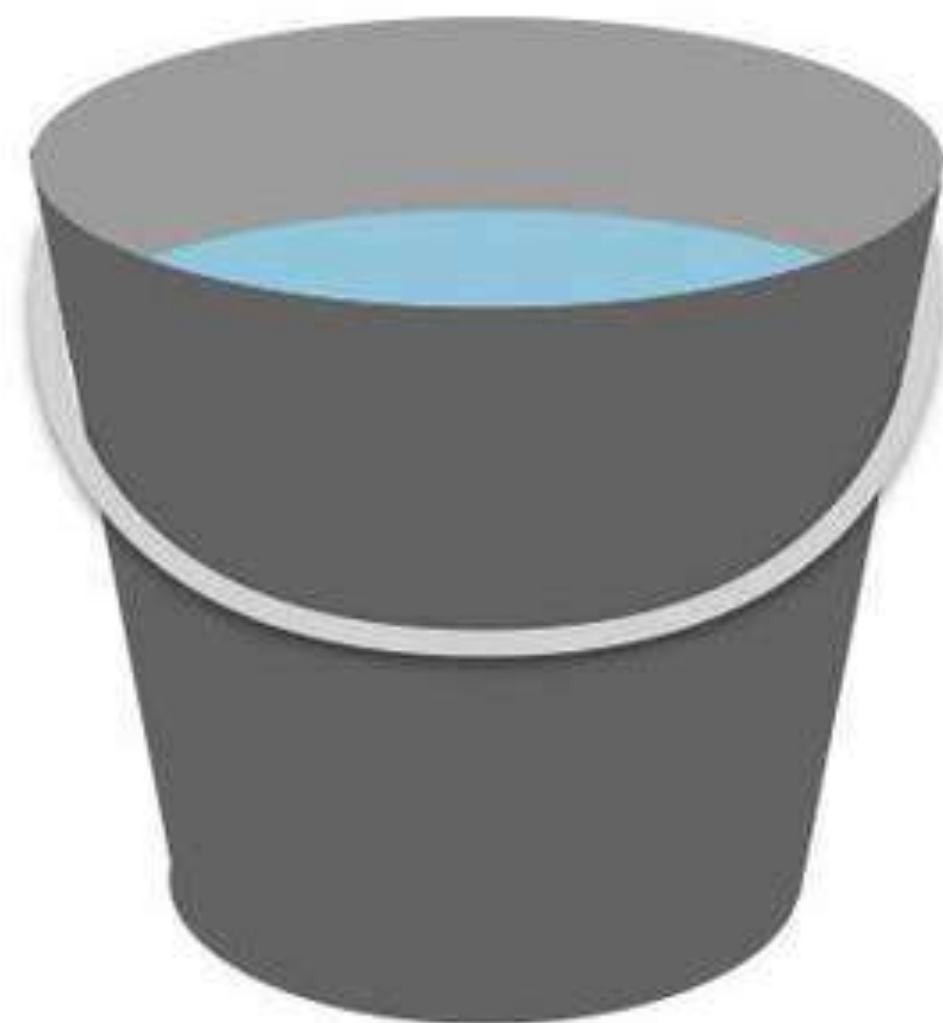
IS THERE A DIFFERENCE?

Stereotypical player





MOBILITY &
FLEXIBILITY



Speed/
Power



Shoulder Internal
Rotation



INJURY RISK VS. PERFORMANCE DECLINE



Training load prescription is like the difference between a blister and a callous.

Too much too soon and you get pain and injury,

But, little and often and you get a resilient tissue



FIELD-BASED SOLUTIONS

“Nothing can substitute for just plain hard work. I had to put in the time to get back.

And it was a grind. It meant training and sweating every day.

But I was completely committed to working out to prove to myself that I still could do it”

– Andre Agassi

"TRAIN THROUGH"

Month	February				March				April				May				June				July				August				September				October				November				December				January																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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"COMPETE, THEN REPEAT"

Schedule 5-4-3-2-1 Days Before Match

5 DAYS	4 DAYS	3 DAYS	2 DAYS	1 DAYS
Session 1	Session 1	Session 1	Session 1	Session 1
Mobility Session (45 mins) See mobility session program	3 x Sets Strength Session (60 mins) See travel strength program	Mobility Session (45 mins) See mobility session program	2 x Sets Strength Session (60 mins) See travel strength program	Mobility Session (45 mins) See mobility session program
Session 2	Session 2	Session 2	Session 2	Session 2
High intensity session (45 mins)		High intensity session (45 mins)		
Bike session		Running session		
10 x 20 sec hard (90-100% intensity) 10 sec easy		See court sprint session		
Rest 2 mins	Flexibility Session (60 mins)		Flexibility Session (60 mins)	High intensity Footwork Session (45 mins)
10 x 15 sec standing up pedal fast (Max intensity) 15 sec sit down easy pedal				Flexibility Session (60 mins)
Rest 2 mins				
5 x 45 sec hard (85-90%)				

MINIMAL DOSE / MAXIMISED TIMING?

WHAT TO PRIORITISE AND WHEN

Keep intensity high, but volume low during tournament periods

Morning at home body management, movement routines

Pre-hit physical warm up - individualise and maximise capacity exposure (speed/power)

Pre-match - specific movement prep to athlete and match

Post-match - assess athlete state, either recover or train

Evening body management top ups, flexibility to wind down

Post Tournament loss - go for volume

ATHLETES TRAVELLING ALONE



> [Int J Sports Physiol Perform.](#) 2015 Nov;10(8):986-93. doi: 10.1123/ijsp.2014-0374. Epub 2015 Mar 10.

The Effect of Predeparture Training Loads on Posttour Physical Capacities in High-Performance Junior Tennis Players

Alistair P Murphy ¹, Rob Duffield, Aaron Kellett, Dani Gescheit, Machar Reid

Affiliations + expand

PMID: 25756284 DOI: [10.1123/ijsp.2014-0374](#)

Abstract

Purpose: Difficulties in preserving physical capacities while on tennis tours necessitate targeted training prescription. This study analyzed training and match loads performed before and on tour for their relationship with posttour physical-capacity changes. A secondary aim was to determine whether the amount of structured conditioning (S&C) work affected the tour-related changes in physical capacities.

Conclusions: Training loads should be carefully prescribed to ensure that sufficient total and tennis loads are completed pretour. Specifically, speed and aerobic capacities may regress with increased training on tour. Finally, a practical observation was that on-tour S&C support resulted in increased S&C training load (around match loads), potentially countering the observed regression of physical capacities. Such a finding has the capacity to alter current physical-preparation structures in high-performance tennis environments with finite resources.



After as little as 5 weeks of unsupervised training in competitive tennis, players showed a decrease in speed, power and aerobic capacity.

Coaches and trainers need to be aware of the likelihood of detraining when athletes are not supervised and put appropriate provisions in place to avoid this detraining effect.

ON TOUR ACCOUNTABILITY

HOW ASSIST ATHLETES IN STAYING ACCOUNTABLE IN GETTING WORK DONE

Frequent communication and encouragement to be self-sufficient

Online programming and training load monitoring

Velocity-based training tools for feedback and mo

Travel kits (bands, TRX, skipping rope etc.)

Scoping out training environment



OTHER CONSIDERATIONS

WHAT ELSE CAN DETRAIN?

Technical detraining? - “Rusty”

Mental resilience - meditation techniques?

Tactical awareness - lack of matches?

Flexibility and mobility often overlooked



KEY TAKE HOMES

Elite / professional athletes need to find ways to train during competition

Can be small “top up” daily training exposures

Use day(s) after last match loss to prioritise training volume where possible

Speed, power and strength need to be prioritised

All comes down to careful balance and planning

But, competition demands alone will not suffice for longevity



“Excellence is an art won by training and habituation.
We are what we repeatedly do. Excellence then is not an
act but a habit.”

– Aristotle, Greek Philosopher (384-322 B.C)

THANK YOU