Fit to Play™ & Perform

High Performance Recovery Strategies

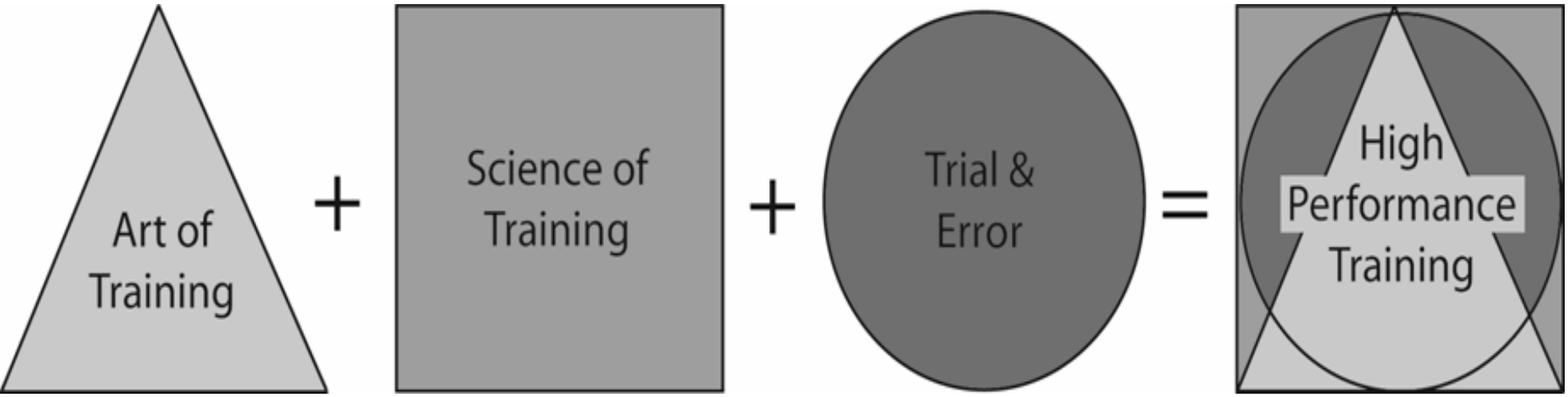
CITY SPORTS AND PHYSIOTHERAPY
CLINICS
KEEPING YOU FIT TO PLAY

Carl Petersen **BPE, BSc (PT)**

High Performance Recovery Strategies

- Benefits of recovery techniques
- Subjectively known by athletes and coaches for years.

Training & Recovery is an Art + Science + Trial & Error



(diagram courtesy racquetTECH publishers)

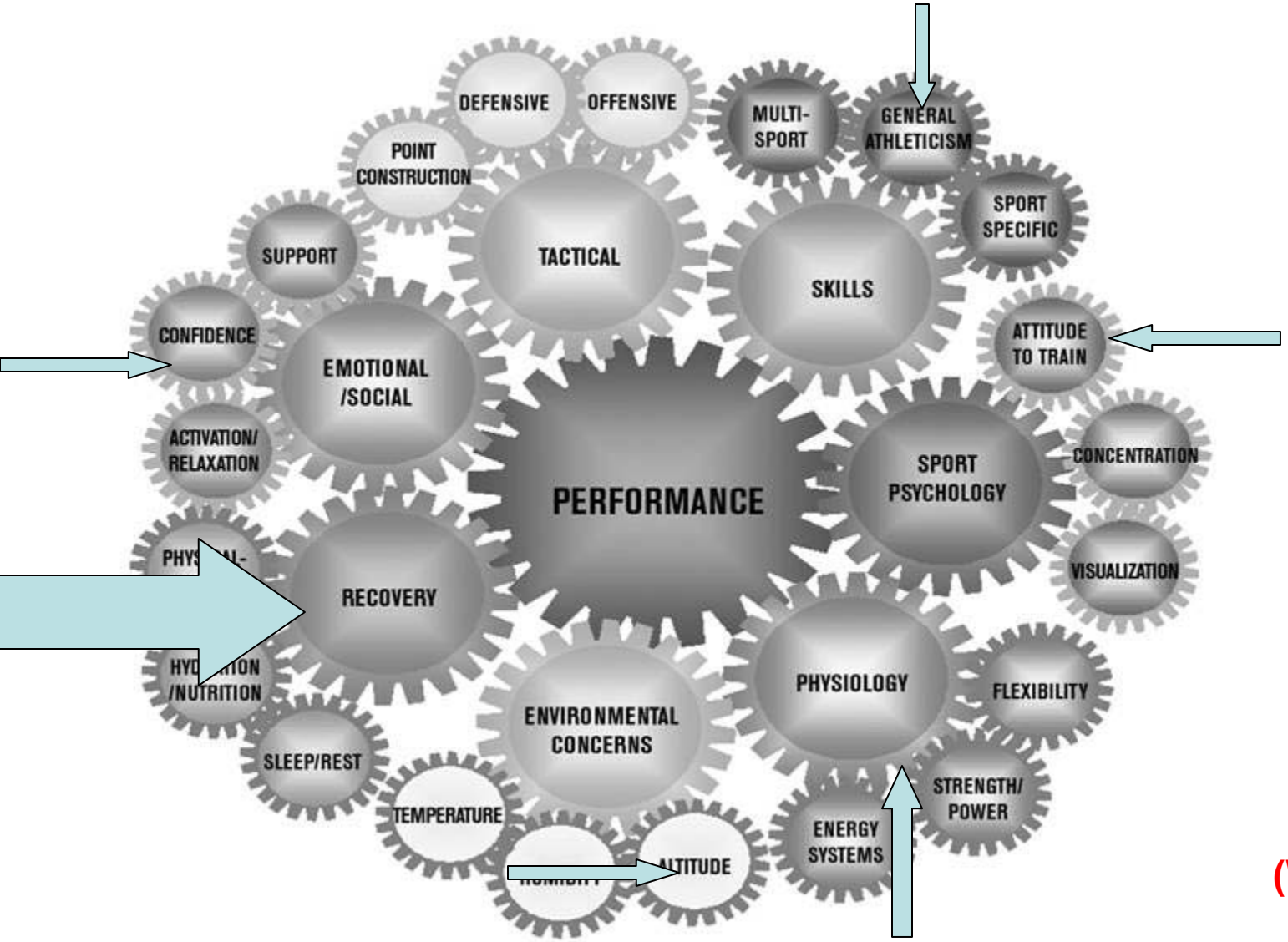
Recovery

- Recovery sessions must be incorporated into:
  - Daily
  - Weekly
  - Yearly training programs.

This overall approach to recovery enhances athletic development and contributes to optimal performance. **(Petersen, 1988)**

- **& Decreases injury**

Smart Training & Recovery Guidelines



(Wenger, 1995)

The S's of Smart Training

(Petersen & Nittinger, 2003 & 2006)

- Structured Training & Practice
- Structured Planning & Periodization
- Structured Environment
- Structured Mental Training
- Structured Assessments
- **Structured Recovery Sessions**

Survival strategies for staying healthy !!

Practical Tips for Faster Recovery

- With the pressures of :
  - Training
  - Work & school
  - Family & friends
  - Travel & competition

- It is difficult to ensure proper recovery guidelines are followed after & between training and competing.

Different Stressors

- Training & Practice
- Travel & Lifestyle
- Environmental
- Health stressors.

Each athlete has a different ability to cope with each stressor: one may cope with training stresses easily but nutritional stress poorly, another the opposite.

(Backus, 1995-course notes recovery

Recovery

- Most elite athletes are exposed to very demanding training schedule often training 2-3 or even more times per day. **(Bompa, 1985)**

- **??? Your own work schedule as a**

  busy instructor / coach

  Off & On Hill / Field / Training Venue

Terminology

Recovery

- Generic term
- Used specifically with reference to
  - ***restoration*** of physiological
  - ***regeneration*** of psycho-logical parameters that have been altered during activity.

Rehabilitation

- refers to recovery from illness or injury
- May or may not be the result of over-training
- Also utilizes recovery techniques.

Recovery (definition)

- Regaining possession or use or control of acquire or find again, reclaim what was lost

(Pocket Oxford Dictionary)

- BUT is that good enough?
- ONLY back to where you started
- Want Adaptation or Super Compensation

Recovery

- Is an inter-individual and intra-individual multi-level (e.g., psychological, physiological, social) process in time for the re-establishment of performance abilities.

  (Kellmann and Kallus, 2001)

Recovery

Some athletes work out even when they are sick

and sometimes they do:

- **too much**
- **too fast**
- **too hard**
- **too soon**

Risk problems associated with improper healing, overtraining or overuse injuries.

Underrecovery

- The failure to fulfill current recovery demands.
  (Kellman, 2003)

- Being only slightly underecovered over an extended period of time results in underperformance in athletes and non athletes alike. **(Kellman, 2002)**

Overtraining

- Training and subsequent overtraining concerns have been recognized in the literature for over 75 years. **(Herxheimer, 1930)**

- The existence of the condition 'overtraining syndrome' has been well documented in the recent literature.
  (Mackinnon & Hooper, 1991) (Fry, 1991),

  (Krieder et al, 1998), (Uusitalo, 2001).

Overtraining or Overstress

- Synonymous terms for a condition in which an athlete suffers from a number of signs and symptoms which may include:
  - overuse injuries
  - chronic fatigue
  - mood disturbances
  - blood chemistry changes

Experience dictates that this could also be called

"crabby" or "irritable athlete syndrome."

Recovery

Some people work out even when they are sick and sometimes they do:

- **too much**
- **too fast**
- **too hard**
- **too soon**

Risk problems associated with improper healing, overtraining or overuse injuries.

They ***overwhelm*** their bodies ability to adapt

- Single sport overload
- Monotonous or poor periodization of training
- Too many competitions
- Inadequate rest and recovery.

Effective Recovery

Primary Benefit

- **Forms the platform for the next training session or day on the slopes.**
- **Work, ADL's & ANL**
- **Clients come back for a lesson**

Secondary Benefits

- **Reduced illness & injury**
- **Reduced overtraining & burnout.**

(Mackinnon & Hooper, 1991)

Effective Recovery

- Provides a safe natural adaptation for ***Drugfree*** performance enhancement
- Training hard & recovering well requires planning & management.
- Provides instructors, athletes & coaches skills in:
  - Self-awareness
  - Self-management
  - Self-maintenance

Smart Recovery

- Coaches & athletes as well as Sport Science need to know how to use:
  - the equipment
  - facilities
  - and modalities available

To facilitate recovery and improve Playing, performance and enjoyment.

Smart Training

Recognize non-adaptive responses to training:

- Prolonged fatigue, apathy
- Sleep disturbances, depression
- Impaired performance
- Muscle & Joint Pain & Inflammation

(sound familiar)

Coaches who know there athletes are at an advantage

for early detection.

Prevalence in Developing Athletes

- Concern with youngsters presenting with S & S of overtraining that are both physical and psychological in nature.
- The investment of time, money and other resources into the development of elite athletes is extraordinary. **(Hogan & Norton, 2000)**
- Mistakes can be costly
- ?? Education or experience to recognize the problem until it is too late.

Injuries Require Treatment

- **P** rotection
- **R** est (modified)
- **I** ce
- **N SAID**'s
- **C** ompression
- **E** levation

4 Generic types of training and competition fatigue. (Calder, 2003)

1) METABOLIC FATIGUE (energy stores)
2) NEURAL FATIGUE of either or both the peripheral nervous system (localized force production) and central nervous system (drive/motivation)
3) PSYCHOLOGICAL FATIGUE (emotional and social stress factors
4) ENVIRONMENTAL FATIGUE (climate and travel)

Fit to Play™ & Perform Recovery Strategies

- Short Term Recovery Strategies
  - Between training sessions
  - Post Training
  - Daily
- Long Term Recovery Strategies
  - Weekly (micro & macro-cycle)
  - Yearly (annual plan)

R-Rules of Recovery (short term-daily)

- Re-Hydrate
- Re-Fuel
- Re-Align
- Regain & Maintain Muscle Length
- Re-Connect the 3'D Core
- Re-Set the Balance **(Petersen & Nittinger, 2003, 2006)**

R-Rules of Recovery (short term-daily)

- Release the soft tissue
- Re-Play Your Day
- Recovery workout
- Reinvigorate with Recovery Techniques
- Rest & Relax (Petersen & Nittinger, 2003, 2006)

Use simple easily administered recovery techniques

after all training sessions.

R-Rules of Recovery (long term –weekly & monthly)

- Resynchronize
- Rest (Active)
- Refresh with variety
- Re-Balance Your Life
- Relax, Retire & Recharge
- Replace Old Habits
- Retire or Semi-retire due to HEALTH

(Petersen & Nittinger, 2003, 2006

Re-Hydrate (practical application)

- Drink H2O or clear juice cut with water
- Sports drinks cut with water.
- Harder, higher & hotter you train (drink more)
- Drink to thirst

- Hypoanatremia is rare but potentially fatal.

Re-Hydrate

- Pre-hydration and immediate re-hydration are key.
- Once de-hydrated it may take 24 hours to top up your tank.
- That means 24 hours of potentially impaired training or skiing.

Re-Fuel

- Dietary carbohydrate is the primary source for the body to manufacture glucose. **(Coyle, 1995)**

- Since glycogen stores take 24-48 hours to replenish, they must be replaced daily, using slow and moderate carbohydrates. **(Costill & Hargreaves, 1992)**

- Each gram of glycogen is stored with approximately 3 grams of water.

Re-Fuel
(practical applications)

- Always carry water
  & to prepare their post
  training snack ahead of time.

- Consume 1.0-1.5 grams
  of carbohydrate per kg.
  of body weight immediately
  after exercise.

Refuel Post Training

50-70 grams CHO within 20-40 min.

- small-medium potato
- ½ cup raisins
- cereal(raisin bran) &
  milk (1 cup)
- ½ cup of yoghurt
- ?? Sports drink if available

Top 10 Recovery Foods

- 1% chocolate milk 2 cups
- Low fat (1% M.F.) fruit yogurt
- Peanut butter & honey sandwich
- Cinnamon raisin bagel 1 small
- Sports Drinks (read label) (carbohydrates & electrolytes)
- High Carbohydrate Energy Bars (read label)
- Dried fruit bars (read label)
- Banana 1 large
- Low fat granola cereal
- Meal replacement drink 1 can

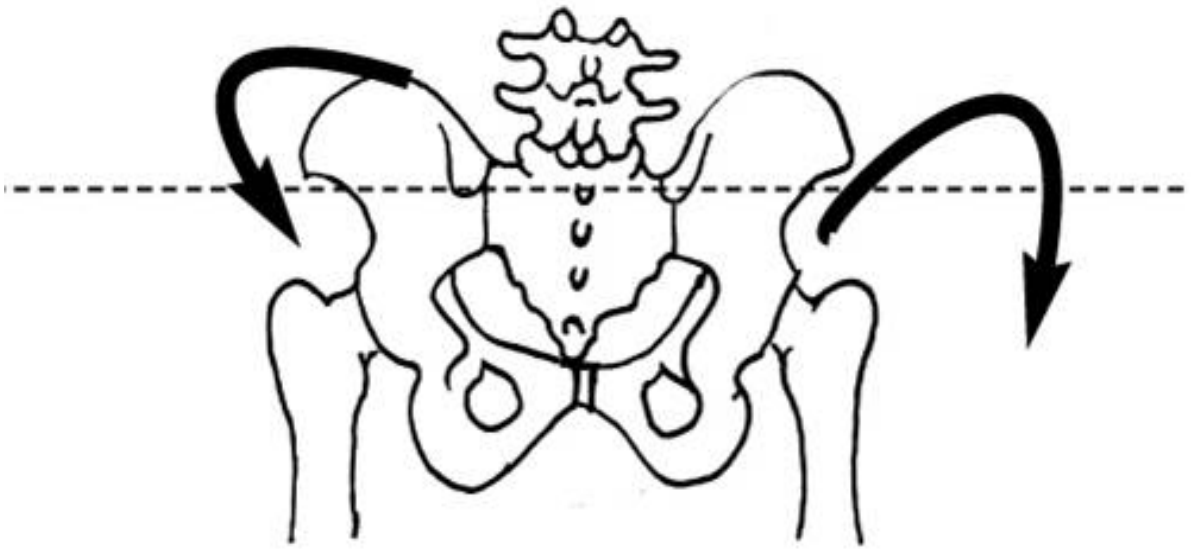
(Parsons, 2006)

Re-Align

- Training and sports are asymmetrical in nature.
- Torque the body's muscle and fascial systems
- Imbalance in length and strength of muscles and tendons.

Re-Align

Malalignment Syndrome



Re-Align the Body

- Abnormal pelvic motion during training can put undue strain on a variety of structures that lead to overuse problems.

- MAS remains one of the frontiers in medicine, unrecognized as a cause of over 50% of back and limb pain.

(Schamberger, 2002)

Re-Align
(practical application)

- Talk to your Therapist
- Push – Pull pelvic alignment
- Symmetrical Stretching
  (conform only)
- Work on Core Strength

Regain and Maintain Muscle Length

- Static stretches prior to exercise did not prevent lower extremity overuse injuries, but additional static stretches after training and before bed resulted in 50% fewer injuries occurring.

  (Hartig & Henderson, 1999)

- Hold relax and contract relax PNF techniques have been shown to be more effective than just static stretching.

  (Enoka, 1994) (Lucas & Koslow, 1984)

Conform Stretch

(immediate pre-post train)

- Pre-Post Training
- Regain length
- Tension only
- No Pain
- Well balanced

Slow Static Stretch & PNF

(3-4 hours post train)

- Muscle elongated to
  point of ‘tension’
  ‘NOT PAIN’ &
  held for 30 –60 sec.
- 20 seconds to overcome
  the bias from the protective
  stretch reflex (Golgi-Tendon).

Re-Connect the Core

- The core is the 'inner unit' as coined by

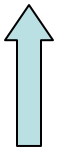
  (Jull, Richardson et al. 1999).

- This myofascial central core unit consists of the following:
  - Thoracoabdominal Diaphragm
  - Pelvic Diaphragm
  - Lumbar Multifidus
  - Transversus Abdominus

Re-Connect the Core (practical application)

- Simple exercises
- Basework & Bridging
- Close or partially close the kinetic chain UB & LB
- Increases the 3-dimensional core stability and ensures:
  - Optimal recruitment
  - Timing
  - Performance
  - Injury prevention.

Reset the Balance Clock

-  **Proprioceptive awareness**
  - **Extremities**
  - **Spinal joints**

- **Better prepared for multi-planar stressors**

- **Create multi joint & muscle chaos**

Re-set the Balance Clock (practical applications)

- Use:
  - Wobble boards
  - Foam rolls
  - Rolled towels
  - Bosu Balls
  - Reebok Core Board
  - Dynamic Edge
  - Ski Fitter.

Release the Soft Tissue

- Active, irritable trigger points that result from heavy training
  - May reduce muscle strength
  - Inhibit the normal contraction- relaxation coordination of the muscles.

These problems can impair training and competition and can progress to injury if they are not resolved. **(Brukner & Khan, 2002)**

Release the Soft Tissue

- Very little evidence-based science to substantiate claims about the benefits of soft tissue techniques.

- Experience and anecdotal evidence supports the benefits for athletes.
- The effectiveness as an adjunct to stretching in order to facilitate flexibility have been demonstrated in the past **(Witkorson-Moller et al, 1983.)**

Release the Soft Tissue (practical application)

- Fascia system responds best when pressure is applied and sustained for two or more minutes.

- It is also a good prone bridge exercise for re-connecting the core.

Recovery Workout (practical application)

- Flush the muscle with a high speed spin.
- High pedalling rates get greater recruitment of slow twitch fibres.

- More resistant to fatigue a higher pedalling rate will prove advantageous and less likely to cause pre-mature fatigue. **(Hagan et al, 1992)**

Reinvigorate with Recovery Menu

- Coaches and athletes need to be aware of the importance of restoration following heavy workloads and how to use the equipment, facilities and modalities available to facilitate recovery.

(Petersen, 1988)

Lactate Clearance

- Underwater massaging following plyometric training helped athletes to maintain explosive leg power.
- In contrast passive rest (doing nothing) after such training resulted in a significant reduction in leg power. **(Viitasalo et al, 1995)**

Recovery Menu

Showers:

- Use them to clean pores.
- Repeat often - especially on warmer days
- or to assist warm-up on colder days.

Recovery Menu (practical application)

Hot & Cold (A)

- Hot (comfortable) x 2 min.
- Cold (as possible) x 10 sec.

(repeat 6-10 x)

Hot & Cold (B)

- Cold (as able to stand) x 1min.
- Hot (as comfortable) x 30 sec.

(repeat 8-10 x)

(Petersen & Nittinger, 2003, 2006)

Recovery Menu (practical application)

Cold Water hose:

- 45 sec each leg /
  30 sec. each arm.
- Warm Shower -30 sec. each leg / 20 sec. each arm.

(repeat 5-7 x)

(Petersen & Nittinger, 2003, 2006)

Recovery Menu

Fit to Play™- Sauna Routine:

- Shower warm -cool 3-5 min. (towel dry)
- Sauna x 7-10 min

  (RH 10-30% & temp 80-90 deg. C)
- Cold plunge or shower x 15-30 sec.
- Rest (feet up) x 5 min.

  (repeat x 3 before a day off)

  (repeat x 1 before training or competition day)
- Warm shower 3-5 min.

(Petersen & Nittinger, 2003, 2006)

Rest & Relax

- The most natural way to relax physically and mentally is to sleep but that is not always possible.
- Mental relaxation can include breathing exercises, meditation, yoga or autogenic training.
- Emotional relaxation can include listening to music & daydreaming.
- ?? Drinking your favorite beverage (lemonade)

Long Term High Performance Recovery Strategies

- Record & Monitor
- Resynchronize
- Refresh with variety
- Rest (active)
- Re & Pre-habilitation
- Relax, Recharge & Reflect
- Review & Re-Plan
- Replace Old Habits
- Retire or Semi-retire due to HEALTH

(Petersen & Nittinger, 2003, 2006)

Record & Monitor

- As training levels begin to increase, athletes should be monitored for signs of mal-adaptation to training.

  (Hawley & Schoene, 2003)

- ?? How to assess the level of preparedness of an athlete and the status of their recovery and adaptation.
  - Depend on intuition
  - Gut feelings
  - Competition results.
- Depending on adaptation to stresses of life and training, adaptations will need to be made to the timing, amount and type of recovery utilized.

Resynchronize
(jet lag concerns)

- Multiple travel trips
- ? Cumulative effect of even a 3 hour time change may affect healing rates due to the stress of internal and external desynchronization.
- Other stresses:
  - Nutrition & hydration
  - Destination (new site) stress
  - Physiological separation from friends and family.

Refresh with Variety

- Variety helps prevent staleness and burnout session.
- Variety from day to day is important to allow recovery from day to day.

(Chandler & Chandler, 2003)

Why do we care ??

- Early specialization
- Single sport children

- Decreased or limited:
  - Multi sport involvement
  - Physical education

- Lack of FUNdamental activities.

(Balyi, 2001)

Relax, Recharge & Reflect

- Take time for reflection-give yourself space to think.
- Busy lives need to take time to reflect
  - Walk / hike
  - Write in a journal or logbook
  - Talk to others
  - Travel time (lounges / airplane)

Replace Old Habits

- Humans are creatures of habit.
- What do you want to change?
- What do you need to change?
- Read & Observe
- Learn & Research

Be Open to new concepts

As Coaches & Therapists We Must

Use Recovery Strategies:

- Perceived to be relevant
- Easily transferable & portable
- Easy access to equipment
- Multi-modal
- Relevant based on type of fatigue.

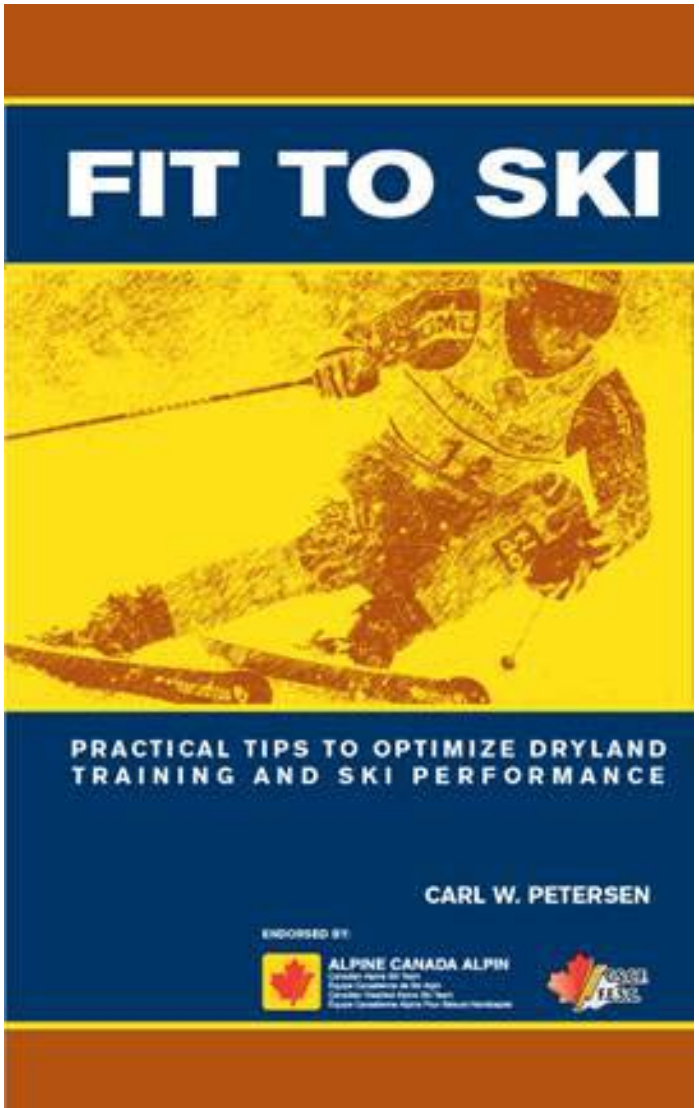
Hard Training

+ Structured Recovery

= High Performance

Recent Resources

www.citysportsphysio.com



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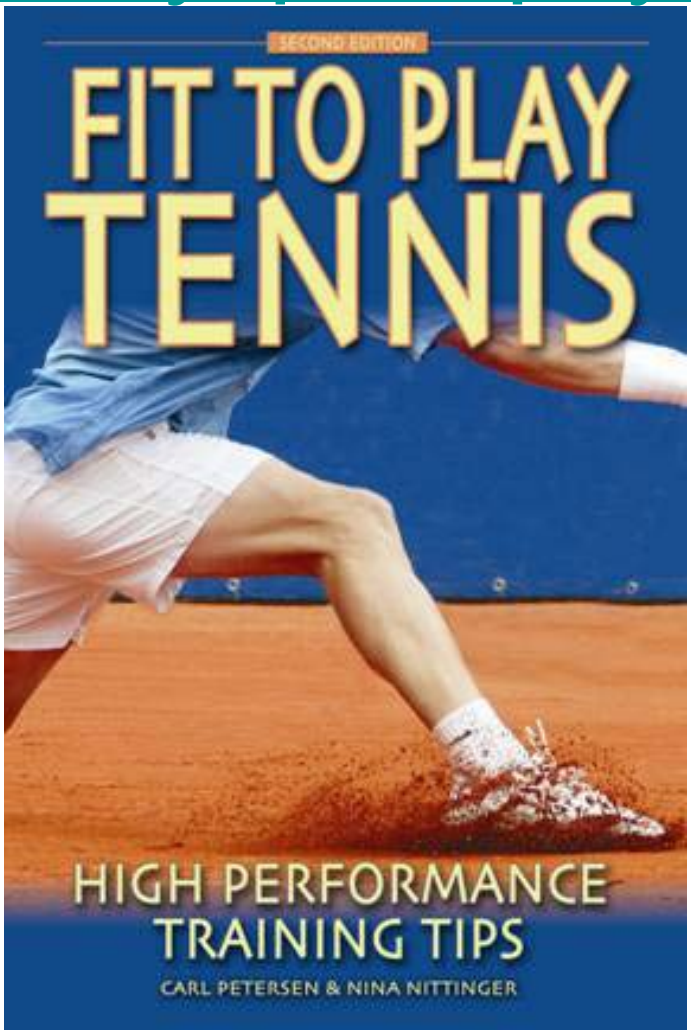

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