What We are Covering Today?

- What is exercise recovery?
- What are we recovering from?
- Recovery modalities
- Wearable technology
- Recovery guidelines by therapy

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What is Exercise Recovery?

The process of restoring the body to a normal state of health, mind and strength

An intentional effort to adapt to the stresses placed upon us.

Critical piece of driving results and preventing injury

Sports, high-intensity training, and in some cases simple training programs are done to excess.

Fatigue and poor performance are symptoms

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What is Exercise Recovery?

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What is Exercise Recovery?

A necessary component of driving adaptation

Categories of adaptation:

Neuromuscular
Metabolic
Cardiovascular
Mechanical

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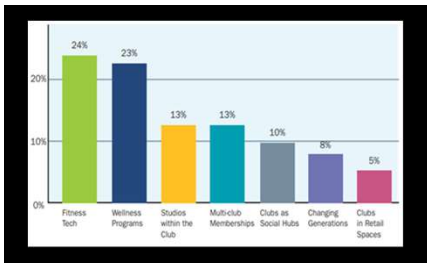
Top Fitness Trends



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The Business of Recovery

$17 Billion spent annually on recovery-focused products
- Stress management
- Sleep habits
- Nutrition
- Immune health
- Psychological health

Recovery is now mainstream

Recovery is now a more common service offering

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What are We Recovering from?

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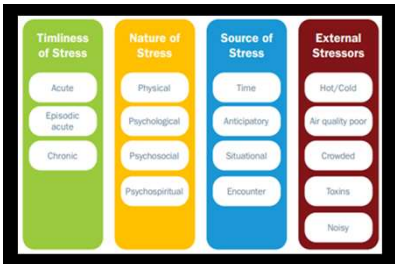
Types and Sources of Stress



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Stress cont.

Short term effects:

- Heart rate and respiration increase
- Acetylcholine prepares body for action
- Blood is driven to periphery
- Decreased CO2 levels (more anaerobic)
- Dilated pupils, narrowing of focus, decrease in peripheral vision

Long term effects:

- Anxiety
- Fatigue
- Irritability
- Sleep disorder
- Non-working muscular tension
- Adaptation failure
- Cognitive dysfunction

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Strain

Categories of Strain:

Cognitive
Anxious thoughts, low concentration and memory

Emotional
Tension, irritability, restlessness, depression

Behavioral
Sleep issues, drinking, eating, smoking, lack of exercise

Physiological
Muscle tension, grinding teeth, headaches, ulcers, weight gain or loss, heart issues

Social
Usually withdrawal, irrational actions or relationships

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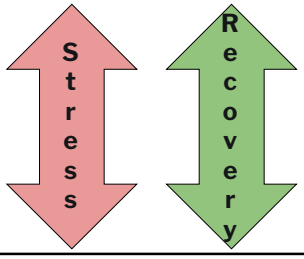
More stress = Greater need for recovery

What is the right dose of recovery?



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Exercise Induced Need For Recovery.

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Acute Variables

Determine the type and the amount of exercise induced stress

- **Exercise selection**
- **Frequency**
- **Time**
- **Intensity**

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Muscle Damage

- Exercise places stress on the musculoskeletal system.
  - New activities
  - New intensities
  - Starting exercise after time off

Exercise Induced Muscle Damage (EIMD)
- Includes DOMS, muscle injuries and tears
- Temporary decrease in muscle force
- Temporary decrease in endurance
- Reduced ROM
- Increased soreness and swelling

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Energy systems

ATP/CP
Replenishment happens quickly assuming healthy balanced diet and health kidney, pancreas and liver

Anaerobic glycolysis
Replenishment occurs via gluconeogenesis (synthesis of glucose)

Aerobic energy system
Replenishment occurs with the consumption of macronutrients to replace glucose

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Nervous/ Endocrine system

Stress response is both neurological and endocrinological

Cortisol is often referred to as the "stress hormone" and is useful in the stress response

High cortisol levels related to:
- Lack of sleep
- Low testosterone
- High belly fat
- High BP
- High LDL
- Low HDL
- Anxiety
- Depression
- Digestive and blood sugar issues
- Suppresses immune system

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Overtraining

Symptoms of Overtraining

Performance	Physiological	Psychological	Biochemical
Performance	Altered resting HR, BP, respiration	Depression and apathy	Hypothalmic dysfunction
Training tolerance	Bodyfat and Weight	Self-esteem	Serum cortisol and sex hormone binding globulin
Recovery Time	Lactate Response	Ability to concentrate	Total/free testosterone
Motor coordination	BMR	Self-efficacy	Testosterone/cortisol ratio
Technical faults	Chronic fatigue	Immunological stress illness occurrence	Muscle glycogen
	Sleep disorders		
	Menstrual disruptions	Rate of healing	Negative nitrogen balance
	Headaches	Immune Function	
	GI Distress		
	Muscle soreness and damage		
	Joint aches and pain		

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That was a lot.

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Recovery Modalities

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Stretching and Myofascial Release

Stiffness and soreness may reduce function and performance

- Increase blood flow and circulation
- Improves the rate of muscle repair
- Can reduce the symptoms of fatigue, such as stiffness, soreness and altered joint function
- Stretching, massage and other fascial therapies are effective recovery
- Techniques can used for athletes and general population

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Fascial Therapy and Stretching

A study found that when applied for up to 10 minutes, joint range of motion was improved by 6.2 percent with static stretching, with a minimal effect foam rolling alone, but by 9. percent when foam rolling, and stretching were done together.

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Sleep

The average amount of sleep an individual gets in present day is about two hours less than in the previous two generations!!

Sleep disruptors:
- Screens and electronics
- Caffeine
- Alcohol consumption
- Medications
- Stress and anxiety

Strategies for improving sleep:
- Avoid computers, phones, and TV two hours before bed
- Avoid falling asleep with the TV on
- Use topical or oral magnesium when deficient
- Sleep in a cool environment
- Avoid afternoon caffeine
- Get some movement and sunlight in the morning soon after waking

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Light Exercise/ Active Recovery

Low-intensity exercise that helps in recovering from high-intensity exercise.

Activity Intensity	Frequency of Active Rest	General recovery Guidelines
Light Intensity 2-5 days a week	As needed between training sessions; mobility, flexibility and light to moderate intensity	No direct recommendation and rest can be as often as needed
Moderate intensity 3-5 days a week	Every 2-3 days; allowing 2-4 rest days per week based on subjective feeling of readiness; mobility, flexibility and light intensity	At least 24 hours between training sessions
High intensity 2 or more days a week; may include athletes in all seasons	24 hours after each training session; mobility, flexibility and very light intensity	At least 48 hours between training sessions

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Nutrition and Hydration

- Post exercise nutrition replaces glycogen and amino acids
- Gut health promotes absorption of nutrients

- Brain is 93% water and Muscle is 73% water
- Dehydration means decreased blood volume
  - This means less delivery of nutrients and oxygen to muscles

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Vibration Therapy

Whole Body Vibration

Local Vibration Therapy

- Increases blood flow and muscle temperature
- Helps in overcoming fatigue, decrease recovery time and improve performance
- Also lowers the muscle's firing threshold via the tonic vibration reflex which can reduce the stress during muscle contractions

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Activity Intensity	Frequency of WBV Therapy
Light intensity 2-5 days a week	Up to 3 times a week: 15 min maximum per session
Moderate Intensity 3-5 days a week	2-4 times per week: 10-15 min maximum per session
High intensity 2 or more days a week. May include athletes in all seasons	Up to 2-3 times daily as needed: 10-15 min maximum per session

Recovery Goal	Frequency of Local Vibration
Movement prep	1-3 min per muscle group
Reduce acute pain and inflammation	1-3 times a week on affected body regions: up to 15 min total
Reduce chronic pain and inflammation	1-3 times a week on affected body regions: up to 15 min total
Sports muscle recovery	Daily: 1-5 min per muscle group never more than 20 min at a time

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Percussion Therapy

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Compression

- **Compression therapy:**
  - Used in medicine for years to prevent deep vein thrombosis, pulmonary embolism and lymphedema.
  - Often in the form of compression garments
- **Pneumatic compression:**
  - Use air pumps to create pressure
  - Typically, a cuff, pants, boots or sleeves

Activity Intensity	Frequency of Compression
Light intensity 2-5 days a week	2-4 times a month
Moderate intensity 3-5 days a week	1-2 times a week
High intensity 2 or more days a week; may include athletes in all seasons	Up to 3 times a week; allow 12-24 hours after each training session

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Cold and Heat Exposure

- Whole body cryotherapy
  - Cold showers
  - Cryotherapy chambers
  - Cold Water Immersion
- Localized Cryotherapy

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Cold and Heat Exposure

Contrast water therapy

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Recovery Goal	Frequency of Cryotherapy for Recovery
Reduce acute pain and inflammation	2-4 times per week
Reduce chronic pain and inflammation	2-4 times per week
Sports muscle recovery	Up to twice daily
Improve sleep	2-3 times a week

Activity Intensity	Frequency of Contrast Water Therapy for Recovery	General Guidelines
Light intensity 2-5 days a week	As needed between training sessions	Ensure water temperatures remain between 50-59 degrees in the cold tub and 95-113 degrees in the warm tub
Moderate intensity 3-5 days a week	Every 2-3 days	**1-3 min warm, 1 min cold; alternate for up to 20 min and always end up in the cold**
High intensity 2 or more days a week; may include athletes in all seasons	Can be done daily for up to 10 consecutive days	

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Supplements

Nutritional

- Omega-3s
- Probiotics
- Protein

Joint Supplements

- Glucosamine
- Chondroitin

Performance

- Creatine
- Caffeine

Sleep

- Melatonin
- Magnesium

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Massage

Localized or injury specific:

- Often combined with PT and corrective exercise for healing and recuperation

Event specific (pre, intra, or post-event):

- For maximizing performance in competition

Training and maintenance:

- May enhance both performance and recovery
- Address muscle imbalances and limited ROM
- Can reduce injury risk from overuse

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Meditation

- Often overlooked as a rest and recovery tool.
- Can be as simple as sitting still, free of interruptions for a few minutes
- The point is to relax, focus on breath and promote the production of alpha and theta waves.

Activity	Frequency of Mindfulness Activity
Meditation	As needed; 20-45 min daily
Visualization	As needed; 5-10 min daily
Yoga	As needed; up to 5-6 times a week for up to 90 minutes per session

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Wearable Technology

- Market grew 30% in 2020 alone.
- Expected to grow to $70 billion by 2025
- More coaches and trainers are accessing the data of their clients
- Not all data is accurate
- There can be a number of reasons that a person's biometrics may fall outside of the norm
- Pay attention to data over time.

Metrics:
- Heart rate
- Respiration rate
- Blood Oxygen/SPO2
- Movement tracking
- Sleep tracking
- Brain Metrics
- Hydration
- Body temperature
- Heart rate variability

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Now What?

- In what ways can you implement any of this information?
- Which new tools or modalities are you willing to try?
- Which new tools or modalities are you thinking about adding to your services?

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Thank you!!!!

- **COME SEE ISSA AT BOOTH 444**
- **SATURDAY JULY 23, 2022 7:30AM**
- **Well-Rounded Glute Training SESSION 616**
  - Presented by Jennifer Scott

Scan here for contact info.

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Exercise Recovery 38

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