



REMOTE LEARNING

Content Assignments

Teacher's Guide

All of the following assignments have been built (quickly, and “un-officially”) for use during this unique circumstance, by any PLT4M teacher that so desires. They are located in the Remote Fitness program, as individual sessions within a “week” entitled “Assignments”.

You can push students to interact with the content this way, in order to track engagement/time spent, or you can use the original online content in any way you see fit (via the “add post” feature, email, google classroom, and so on).

We will provide supporting videos and explanations of all the relevant tech functionality, but please reach out with questions.

Linked below, each assignment has a basic description of subject matter, or theme, potential length, a handful of questions with possible answers, and all relevant research/source references for additional reading.

It is our intention to further add to this list over the coming weeks if the content proves useful to our community!

Assignments

1. [“The Power of Fitness” \[Article\]](#)
2. [“3 Keys to Warming Up” \[Article\]](#)
3. [“SMR for Mobility & Recovery \[Article\]](#)
4. [“Injury Prevention” \[Video/Podcast\]](#)
5. [“Energy Systems \[Video/Podcast\]](#)
6. [“The DOMS” \[Video/Podcast\]](#)
7. [“Mindfulness” \[Article\]](#)

8. **“Hypertrophy” [Video/Podcast]**

9. **“Lactic Acid” [Video/Podcast]**

“The Power of Fitness” [Article]

Theme - History of PE, Current Lack of Physical Activity in Schools, The Mental/Emotional Benefits of Fitness & Exercise

Length - Moderate, 20-25 Minutes (1200 word article & Questions)

Original Article Link - <https://plt4m.com/2020/01/02/fitness-in-schools-the-power-of-pe/Questions/Answers>

1. Describe the “history” of PE within schools over the last 200 years.
 - a. 1800’s - PE was focused squarely on gymnastics and personal hygiene.
 - b. Shifted to more of a sports-dominated pursuit for a hundred years.
 - c. then, the press of global war forced the government to push PE back towards fitness education and physical standards (driven mostly by a need for a fit “fighting-age” population).
 - d. economic downturns in the 70’s and 80s, though, and the subsequent budget cuts, led to a drastic decline in the presence of comprehensive PE programs in our nation’s educational institutions.
2. What grade did the US receive on its “Report Card” for Physical Activity in 2015, and why?
 - a. the United States earned a D- in Overall Physical Activity within the recently released 2018 U.S. Report Card on Physical Activity for Children and Youth.
 - b. Only 6% of students get the recommended 60 minutes of physical activity each day.
 - c. Just 30% attend any sort of PE class every day.
 - d. Worse, over 50% attend such a class just once a week!
3. Identify some of the concerning statistics depicting the current status of physical fitness of high school students across the country
 - a. less than half of 12 to 15 year old youth have adequate cardiorespiratory fitness levels
 - b. only 52% of children between 6 and 15 years old have adequate muscular endurance, based on the number of pull-ups performed
 - c. of High School-aged students, just 5.3% of boys and 12.1% are in the “excellent” Health Benefit Zone for grip strength.
4. What are some long-term health risks associated with poor physical fitness?
 - a. High Blood Pressure & Cholesterol
 - b. Cardiovascular Disease
 - c. Impaired glucose tolerance, insulin resistance, and type 2 diabetes.
 - d. Asthma & Sleep Apnea
 - e. Low Bone Density & Joint Problems

5. What are the effects of exercise on the brain?
 - a. increase in blood flow and oxygenation
 - b. the development of cerebral capillaries, the production of neurotrophins, the growth of nerve cells, and the overall improvement of the brain's neural network.
 - c. brain grows in size
6. How can fitness in PE affect academic performance?
 - a. improved execution functioning and cognition.
 - b. better concentration/better memory
 - c. can process, store, and retrieve information more effectively.
 - d. "Higher Test Scores"
7. What are some of the social/emotional benefits of regular exercise?
 - a. elevate mood
 - b. positively influence depression and anxiety
 - c. reduce psychosocial stress
 - d. enhance various aspects of self-esteem.
8. What are the positive consequences of fitness in PE in terms of classroom behavior
 - a. Improvements in impulse control, attention, attitude, and task-based behavior
 - b. fewer disciplinary issues
 - c. improvement of ADHD symptoms
9. What do YOU think the role of physical fitness and exercise should be within schools?
 - a. Open-Answer.

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<https://www.developmentalscience.com/blog/2019/5/7/our-teens-are-more-stressed-than-ever>.

“3 Keys to Warming Up” [Article]

Theme - How to Warm Up properly for any workout.

Length - Moderate, 15-20 Minutes (850 word article, some videos, & Questions)

Original Article Link - <https://plt4m.com/2018/06/10/how-to-warm-up/>

Questions/Answers

1. What is the point of light “aerobic” movement at the beginning of a warm up, and what are the results?
 - a. Want to elevate heart rate and incite blood flow to the entire body
 - b. Goals are increases total body temperature and tissue elasticity
2. Provide 3 examples of dynamic warm-up movements.
 - a. PVC Pass throughs
 - b. Bodyweight Good Mornings
 - c. Inchworm to a Push Up
 - d. Continuous Line Drills
 - e. Spiderman & Reach
3. What role can static stretching play within a warm up protocol?
 - a. can help prime our body for optimal movement and positioning in our upcoming training.
 - b. if done consistently, it can also improve our overall flexibility, stability, and range of motion over time.
4. Some people argue that static stretching can negatively influence subsequent strength and power output. Is this true? How can we avoid any such negative effects?
 - a. Recent research suggests that this isn't the case
 - b. research has shown that static stretching, when done in durations of greater than 30, but less than 60 seconds has been proven to improve range of motion while not impacting peak power or strength.
 - c. when it is combined with dynamic movement, static stretching at all has absolutely no negative impact on muscular strength or power
5. Give one example of neuromuscular “activation” and why it might be used in a warm up.
 - a. Hip extensions for posterior chain core activation prior to heavy deadlifts
 - b. concentrated shoulder pre-hab before barbell pressing work.
 - c. glute activation before squatting to help prevent valgus knee collapse
6. Who should think about and work on movement technique every single training session?
 - a. EVERYONE.

Sources Referenced

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“SMR for Mobility & Recovery” [Article]

Theme - Manual soft-tissue therapy, what, why, and how

Length - Short, 10-15 Minutes (800 word article, some videos, & Questions)

Original Article Link - <https://plt4m.com/2018/06/21/smr-for-mobility-recovery/>

Questions/**Answers**

1. What is SMR short for?
 - a. **Self-Myofascial Release**
2. What is “Myofascia”
 - a. **A strong, flexible sleeve of connective tissue that covers all of your muscles, bones, and joints**
3. What are “adhesions”?
 - a. **Commonly called “knots”, sticking points, trigger points**
 - b. **Places at which the fascia has become tangled, tight, or stuck to muscle tissue**
4. What is the purpose of soft-tissue manual therapy, aka SMR?
 - a. **To apply pressure to soft tissue**
 - b. **Incite blood flow**
 - c. **Break up adhesions, restore tissue elasticity**
5. What are the potential benefits of rolling out *prior* to exercise?
 - a. **Rolling out prior to a training session has been shown to temporarily increase joint range of motion for up to 10 minutes, without negatively affecting strength or power.**
 - b. **improve our movement efficiency under load, which in turn can improve our performance.**
6. What are the potential benefits of rolling out *after* exercise?
 - a. **rolling out after an intense training session has been shown to potentially reduce the effect of the dreaded “DOMS” in the days following.**
 - b. **At worst, rolling offers up a placebo effect that lowers athletes’ level of perceived pain post-exercise.**

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“Injury Prevention” [Video/Podcast]

Theme - The effects of resistance training on the prevention of injury

Length - Long, Roughly 1 Hour (50 minute video & Questions)

Original Post Link - <https://plt4m.com/2020/03/16/57-injury-prevention-what-when-why-and-how/Questions/Answers>

1. Other than “previous injury”, what are some of the risk factors that can lead to injury in the gym or on the field?
 - a. muscular dysfunction/imbalance
 - b. fatigue
 - c. task-specific flexibility
 - d. mobility/mechanics - aka jumping and landing properly
2. What are some of the effects of resistance training, in general, on the skeletal system, connective tissue, and muscles of the human body?
 - a. resistance training provides a large osteogenic (increase in bone mineral density) effect - makes bones stronger
 - b. increases in both the size and strength of ligaments and tendons through an increase in the collagen content within the connective tissue sheaths. Improved size and strength of connective tissue
 - c. correction of the existing muscular dysfunction via improved muscle size and strength...making all muscles bigger and stronger, more able
3. Define “Mobility”.
 - a. “The degree to which an articulation (where two bones meet) can move before being restricted by surrounding tissues (ligaments/tendons/muscles etc.). Otherwise known as the range of uninhibited movement around a joint.”
 - b. Ability to move a joint through a complete range of motion
4. Define “Stability”.
 - a. “The ability to maintain or control joint movement or position. Stability is achieved by the coordinating actions of surrounding tissues and the neuromuscular system.”
 - b. Strength/control through a complete range of motion

5. Define “Coordination”.
 - a. The ability to control multiple muscles, joints, systems at once to the effect of proper/healthy movement patterns
6. In your own words, what is the best way to stay healthy and prevent injury?
 - a. Well-balanced strength and conditioning program, done consistently, year-round.

Sources/Further Reading

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“Energy Systems” [Video/Podcast]

Theme - Bioenergetics, and the conditioning of energy systems for performance

Length - Long, Roughly 1 Hour (42 minute video, plus questions)

Post Link -

<https://plt4m.com/2019/12/09/chalk-talk-episode-32-energy-systems-conditioning-for-performance/>

Questions/Answers

1. What is the molecule that your body needs for “energy” in order to complete any physical task?
 - a. ATP, or Adenosine Tri-Phosphate
2. What is the difference between “anaerobic” and “aerobic”?
 - a. Anaerobic means “without” the presence of oxygen, aerobic means “with”
3. Name the 3 metabolic pathways. For each, identify the intensity level and duration of activity that is most associated with it, and provide an example activity.
 - a. Phosphocreatine, Alactic
 - i. High Intensity
 - ii. 0-30ish (loose window) seconds
 - iii. Lifting Weights, Short Sprints
 - b. Glycolytic, Anaerobic Respiration, Lactic
 - i. Moderate Intensity
 - ii. 30-180 (loose window) seconds
 - iii. 400m Sprint
 - c. Aerobic, Oxidative
 - i. Low Intensity
 - ii. 1-2:00 and beyond
 - iii. “Cardio” - or anything done continuously for a significant amount of time
4. Can you ever only utilize 1 of these pathways during activity?
 - a. No, the ALWAYS all work together, just to varying degrees and levels depending on the energy demand
5. If you are trying to train one specific system, what is the single biggest consideration you must make?
 - a. Work to rest ratios - physically impossible to repeat performance within a given system without adequate rest
6. Is “cardio” evil? What is the importance of aerobic capacity?
 - a. Aerobic capacity is the base upon which all other ability is built
 - b. Directly affects the ability of other energy systems to recover and replenish - repeated sprinting is dependent on aerobic capacity
7. What are some potential “skill” benefits of conditioning?
 - a. Mental “toughness”, aka attention to movement/detail/control while under fatigue
 - b. Dynamic energy expenditure, managing energy levels as needed

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"The DOMS" [Video/Podcast]

Theme - The causes, considerations, and treatment of exercise induced muscle soreness

Length - Long, roughly 1 hour (45 minute video/audio, with questions)

Original Post Link - <https://plt4m.com/2020/03/23/59-the-doms-all-things-muscle-soreness/>

Questions/Answers

1. What does the acronym "DOMS" stand for?
 - a. "Delayed Onset Muscle Soreness"
2. What are some possible factors that contribute to the experience known as "delayed onset muscle soreness"?
 - a. Intensity or volume of work beyond current capacity, "unfamiliar" type/volume of work, going "above and beyond"
 - b. Eccentric training
 - c. Genetics - everyone is different
 - d. Other factors, like hydration, or even the fear of pain
3. Is 'Lactic Acid' the culprit that causes soreness?
 - a. NO!
 - b. Lactate/Lactic acid is flushed/cycled out of working muscles in minutes/hours, not the cause of soreness days later
4. Name some of the actual possible causes of the DOMS, at a cellular level.
 - a. Muscle/connective tissue damage
 - b. Metabolic Distress/waste

- c. Inflammation
 - d. Nociceptors - free nerve endings that respond to damaging stimuli by sending pain signals to the brain. In muscle tissue, these receptors can sense “disruption” outside and around the cells, then send pain signals to the brain
- 5. What is the only real way of “preventing” the frequent or severe occurrence of the DOMS?
 - a. Proper training progression
 - b. Not overdoing volume/intensity before you are ready for it, easing in, ramping up, etc
- 6. While there may be no definitive proof that any of them work, what are some possible methods of treating the DOMS that may be worth trying - if only to relieve the symptoms of pain?
 - a. SMR/Foam Rolling
 - b. Heat
 - c. NSAIDs
 - d. Light activity
- 7. Have you ever felt the DOMS? What is your most memorable experience with post-workout soreness? What was it from? How did it affect you? What did you do to feel better?
 - a. Open Answer

Sources/Further Reading

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“Mindfulness” [Article]

Theme - Taking care of the non-physical side of “Wellness”

Length - Moderate, 15-20 minutes (5-10 minute article, with reflection questions)

Original Post Link -

<https://plt4m.com/2020/03/19/mindfulness-8-ideas-for-teachers-and-students-at-home/>

Questions/Answers

1. After reading the article, pick 3 of the “mindfulness” strategies and try them! Then, reflect on your experience. What did you try? How did it make you feel afterwards? Would you do it again? Would you try others? Do you have your own approach to staying happy and in the moment?
 - a. Open Answer

“Hypertrophy” [Video/Podcast]

Theme - All things muscle growth (from promoting size to the fear of “bulking up”)

Length - Moderate, roughly 45 minutes (30 minute video/audio, with questions)

Original Post Link -

<https://plt4m.com/2019/11/25/chalk-talk-episode-29-hypertrophy-all-things-muscle-growth/>

Questions/Answers

1. What does hypertrophy mean?
 - a. Literally, muscle growth
 - b. Increase in diameter of muscle cells/muscle fibers, through use
2. What is the strength-endurance continuum?
 - a. Rep Ranges & Weights
 - b. Strength low reps, heavy weight
 - c. Muscular Endurance 12-15+ reps, light weight
 - d. Hypertrophy, 8-12 reps, moderate weight (not true??)
3. Which rep/weight ranges can induce hypertrophy?
 - a. All/any
 - b. Any total Volume of work done that stresses the muscle
4. What are the two ways you can induce hypertrophy
 - a. Mechanical Tension, aka moving against resistance
 - b. Metabolic Distress, aka working under fatigue
5. Is hypertrophy vital to “performance” from an athletic standpoint?
 - a. Yes/no - not wildly so on it's own
 - b. More muscle mass = more durable, less injury
 - c. More muscle mass = better gains in more important domains like strength or strength endurance
6. Explain the “up one level, down one level” concept with regards to hypertrophy.
 - a. Your size/body type/weight range is primarily driven by genetics
 - b. You have a frame, you can choose to maximize that frame, or not
 - c. But you will never fundamentally change your frame
 - d. Just want to be the best performing you!
7. Why is the fear of “bulking up” relatively unfounded?
 - a. Gaining lean muscle mass is very hard - it's way more about what happens outside of the gym
 - b. Nutrition & Activity - must intentionally eat a ton, and in complete relation to caloric expenditure for surplus and gain
 - c. Biochemistry - Testosterone is needed to really pack on muscle
 - d. Still all limited by your natural frame, aka genetics.

Sources/Further Reading

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"Lactic Acid" [Video/Podcast]

Theme - Debunking myths surrounding "Lactic Acid" and highlighting the truth of "Lactate"

Length - Long, roughly 1 hour (45 minute video/audio, with questions)

Original Post Link - <https://plt4m.com/2020/04/13/65-lactic-acid-debunking-the-myth/>

Questions/Answers

1. For decades, “lactic acid” was thought to be the culprit behind a LOT of negative outcomes related to fitness and performance, what were they?
 - a. Considered a metabolic waste product
 - b. Directly caused muscular fatigue and “the burn”
 - c. Negatively impacted performance
 - d. Caused muscle soreness
2. What is the difference between “lactic acid” and Lactate, and which one actually exists in the human body?
 - a. Lactic Acid is an actual “acid” that is not produced in the body
 - b. Lactate is a small, non-acid, molecule that plays a big role in human metabolism
3. Besides exercise, what other important roles might Lactate play within the human body?
 - a. Brain and heart fuel source, best/most preferred
 - b. Links to alzheimers
 - c. Injury rehabilitation
 - d. Links to some chronic metabolic disorders
4. Why is Lactate an important component of fitness and performance, how does it help?
 - a. Link between anaerobic and aerobic metabolism
 - b. Anaerobic respiration creates ATP & Pyruvate, pyruvate can be broken down into lactate and NADH which can then cycled back into glycolysis
 - c. The lactate is then shuttled for use in slow twitch muscles for aerobic respiration, or used as a direct fuel source, or converted to glucose for use
 - d. It is a FUEL - not a WASTE
5. What is the actual cause of the “burning” sensation our muscles feel during intense exercise?
 - a. Rising acidity levels in the muscles, acidosis
 - b. Build up of Hydrogen Ions, protons, that are a product of anaerobic metabolism when aerobic metabolism can't keep up
6. Why is the concept of “flushing out the lactic acid” with recovery work a myth? Does lactate play any role in muscle soreness?
 - a. Lactate is cleared from the muscles in minutes/hours after exercise, is not present in following days
 - b. Lactate has NO effect on muscle soreness, NOT a factor in the DOMS
7. Why, then, do recovery runs or light active recovery workouts work? How do they help?
 - a. A recovery workout increases the heart rate, and in turn, increases oxygen intake. The blood brings the oxygen to the muscle, and the oxygen promotes healing. Recovery runs also warm the muscles, which relieves the pain of stiffness.
 - b. The workouts promote muscle modeling, and increases production of growth hormones. These compounds, combined with oxygen, decrease inflammation and rebuild the impacted muscles, removing soreness and improving function.

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