Lesson Plan 14

Content Area: P.E.- Cross Country Skiing

Training to get faster- different levels of intensity

**Time Estimate:** 60-90 minutes

**Summary:** This lesson plan serves as an overview of different workouts that can be done to further athlete development by training at different intensities.

**Goals/Objectives:**

Athletes will be able to:

* use perceived effort to gauge the intensity level they are training at
* understand the different levels of intensity used in training
* define their own training zones

**Assessment:** Use your own knowledge of intensity levels to gauge if students are using the proper intensity for the given workout. Kids will be kids and it is important to let them surge and naturally drift between intensity levels. It is not until they are older and really desire to increase their abilities that intensity levels should be followed more strictly. Take time then to look for skiers skiing with good technique and look to see that they acknowledge and recognize that there are different intensities in which to move that all serve a different purpose.

**Equipment/Tools/Terrain:**

Gym

Heart rate monitor

Varying terrain

**Get the Jitters Out:**

 Run two laps of the gym, do 10 jumping jacks, and take a seat

**Instructional Input**: In order to become more fit and faster in cross country skiing, skiers have to work moving at varying intensities to target different parts of their bodies. Cross country skiing is a challenging sport because it requires skiers to have strong muscles and strong hearts. Skiers need to work well aerobically as well as anaerobically. Just like you would lift weights in the gym to get stronger muscles, you need to move at different intensities to get stronger inside your body, the heart and lungs. Moving at different intensities also makes your muscles stronger and trains all the parts of your body to work together as a unit. Different speeds and durations of work target different parts of the body. It is important to work in all intensities and to balance this type of intense training with rest and also lots of distance skiing. Copy the below chart for students to put in their notebooks.

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| Training Intensities for Cross Country Skiers (adapted from Alaska Pacific University Nordic Ski Center) |
| L1 | Easy training used for recovery, warm up and warm down. Very important for recovery between hard sessions. 60-70% of max heart rate or effort |
| L2 | Everyday distance training pace. "Bread and Butter" of the endurance athlete. Moderate activity, typically between 30 minutes and 3 hours. 70-80% of max heart rate or effort |
| L3 Low | Fast Aerobic work or Marathon Pace. Typically used in pace work ranging from 20-90 minutes. Fatigue builds from the duration. Often good to work on technique while moving at this type of pace even if for a short duration. This pace helps to build muscle endurance. Can still talk while moving. 80-85% of max heart rate or effort |
| L3 High | Anaerobic threshold pace. "Comfortable Fast" typically used in pace from 20-60 minutes or intervals from 5-20 minutes with short recovery. 30-50 km race pace. This is also used to build muscle endurance while also working to strengthen the heart. Talking become increasingly harder and focus needs to increase to keep moving. 85-90% of max heart rate or effort |
| L4 | VO2 Max or interval pace. Fast sub-maximal effort with heavy breathing, but a lightness in the muscles. 5-10km race pace with intervals typically between 2 and 5 minutes with equal to slightly less recovery. 3-5 repetitions. Used to strengthen the heart and lungs. Talking is not possible, muscles will feel fatigue and some burn, focus to keep going is required. 90-95% of max heart rate or effort |
| L5 | Anaerobic training or sprint pace. 95% effort with work times between 30-120 seconds with long recovery. 5-10 repetitions. Used to develop the anaerobic system, training the body to work for longer periods without enough oxygen. Muscles will have the “flood” feeling or burn immediately after finishing. That feeling is the anaerobic system working. 95-100% of max Heart rate or effort |
| L6 | Speed. Typically between 5-30 seconds short bursts with long recoveries. 10-15 repetitions Used to increase speed by developing fast twitch muscle strength.  |

The majority of training is done in L1 and L2. However, working in some faster paced workouts, not only makes you faster and stronger, but is also fun and a good way to spice things up. All of these intensities can be developed into fun workouts such as the L4 workout described next. Have kids race head to head, make relays, put a jump in the middle or an obstacle, or develop challenges for the kids to work through.

To have kids find their max heart rates, you will need a real heart rate monitor. Have kids bound with poles uphill for 3-4 minutes as hard as they can and record their heart rate at the top. 220-age is a good approximation if you do not want to do a max test.

**Modeling:** Show what the pace might look like for different intensities or the type of breathing that might occur. Demonstrate how to measure heart rate using your fingers on your throat if heart rate monitors aren’t available.

**Guided Practice:**

Have students run through a few technique drills for whichever technique they will be using during the intensity in order to warm up and develop something to think about while moving quickly.

**Independent/Group Practice and Differentiation:** Warm up is important when doing intensity. Just like a car can shift from first to fifth, our bodies don’t like to either. It is a good idea to always start with at least 15 minutes of easy skiing. If you are doing L4 or higher it is a good idea to spend a few minutes moving at a L3 pace to further warm up or shift through those gears before embarking on the task at hand. Run through the main part of the workout, using a specific intensity and a specific recovery time period in which skiers should move around slowly before starting the next piece of intensity. Having a technique goal for the intensity session is a good idea to give athletes something to think about while they are moving and to continue to improve all aspects of their skiing. After they have finished all the repetitions, have athletes cool down or ski easy for another 15 of so minutes to clear the waste products out of the muscles.

**Wrap Up**

Have athletes reflect on their training, things that went well and things that didn’t. Give time to record any progress on goals and the daily activity.

Standards

Grades 3-5

**Standard B**
Apply movement concepts to the learning and performance of physical activities

1.    Select and practice a skill in which improvement is needed.
5.    Use specific feedback to improve performance.

**Standard C**
Participate regularly in physical activity:

1.    Consciously choose to participate in moderate to vigorous physical activity outside of physical education class on a regular basis.

2.    Participate in local physical activity opportunities.

3.    Choose to participate in structured and purposeful activity.

4.    Monitor his or her physical activity using a variety of tracking tools (e.g. fitness logs, pedometers).

**Standard D**
Apply fitness concepts to achieve and maintain a health-enhancing level of personal fitness:

1.    Participate in selected activities that develop and maintain the health-related components of fitness: muscular strength, muscular endurance, flexibility, body composition and cardiovascular endurance.

2.    Compare target heart rate and perceived exertion during physical activity.

3.    Measure, record, and compare the heart rate before, during, and after participation in physical activity of various levels of intensity.

4.    Engage in appropriate physical activity that results in the development of cardiovascular endurance.

5.    Recognize that physiological responses to exercise are associated with their own levels of fitness.

6.    Choose to participate in activities to increase muscular strength and endurance.

7.    Explain how improved flexibility increases the ability to perform skills.

8.    Maintain heart rate within the target heart rate zone for a specified length of time during an aerobic activity.

**Standard E**
Exhibit personal and social behavior that respects self and others in physical activity settings:

1.    Demonstrate awareness and participate safely when involved in activity.

2.    Form groups quickly when asked.

3.    Recognize importance of individual responsibility in a group effort.

4.    Encourage others by using verbal and nonverbal communication.

5.    Accommodate individual differences. (e.g. ability levels, gender, ethnicity, disability among people, and physical activities of a variety of actions, culture, and ethnic origins).

6.    Work productively with assigned or random groups without adult intervention.

7.    Contribute ideas and listen to the ideas of others in cooperative problem-solving physical activities.

8.    Act in a safe and healthy manner when confronted with conflict during physical activity.

9.    Analyze possible solutions to a movement problem in a cooperative physical activity and come to a consensus on the best solution.

**Standard F**
Value physical activity for health, enjoyment, challenge, self-expression, and/or social interaction:

1.    Develop self-confidence and a positive self-image in physical activity settings.

2.    Choose motivators (e.g., music, friends) that will enhance fun and enjoyment in a physical activity setting.

3.    Participate in physical activities which will allow students to set and achieve individual and team goals.

4.    Participate with others in a variety of competitive and non-competitive physical activities.

Grades 6-8

**Standard C**
Participate regularly in physical activity:

1.    Recognize and understand the significance of physical activity in the maintenance of a healthy lifestyle.

2.    Set SMART goals, (specific, measurable, attainable, realistic, time sensitive) for participation in activities of own choosing.

3.    Maintain a physical activity log for a designated period of time (e.g., weight training charts, steps during the day, time engaged in physical activity).

**Standard D**
Apply fitness concepts to achieve and maintain a health-enhancing level of personal fitness:

1.    Monitor heart rate before, during, and after various intensity levels of physical activity.

2.    Compare the fitness benefits of a variety of activities.

**Standard E**
Exhibit personal and social behavior that respects self and others in physical activity settings:

1.    Demonstrate appropriate behavior in physical activity settings.

2.    Demonstrate concern for safety of self and others during games and activities.

3.    Demonstrate self-control and sportsmanship/etiquette during games and activities (e.g., accepting controversial decisions).

**Standard F**
Value physical activity for health, enjoyment, challenge, self-expression, and/or social interaction:

1.    Identify several reasons why participation in physical activities is enjoyable and desirable.

2.    Reflect on reasons for choosing to participate in selected physical activities (e.g., health, challenge, self-expression, social interaction, personal goal).

3.    Enjoy working alone or with others in a sport or physical activity to achieve a goal.

Grades 9-12

**Standard B**
Apply movement concepts to the learning and performance of physical activities:
2.    Use a variety of complex movement patterns, independently and routinely, to improve skills.

3.    Acquire new skills while continuing to refine existing ones.

4.    Identify basic biomechanical principles as they pertain to movements within a physical activity.

5.    Recognize various levels of performance (novice, competent and proficient).

6.    Apply knowledge of major muscle groups to improve performance and/or create training plans.

7.    Explain to others the importance of strategies and safety procedures for success while participating in physical activity (e.g., weightlifting, wearing a helmet while snowboarding).

**Standard C**
Participate regularly in physical activity:

4.    Develop evidence-based personal activity plans that include self-selected physical activities and sports.

**Standard D**
Apply fitness concepts to achieve and maintain a health-enhancing level of personal fitness:

4.    Design, implement, monitor, and adjust a personal fitness program to meet personal needs and goals for a lifetime.

**Standard E**
Exhibit personal and social behavior that respects self and others in physical activity settings:

1.    Demonstrate leadership by holding self and others responsible for following safe practices, rules, procedures, and etiquette in all physical activity settings.

2.    Demonstrate an understanding of responsible personal and social behaviors in physical activity settings.

3.    Accommodate individual differences. (e.g., ability levels, gender, ethnicity, disability among people, and physical activities of a variety of actions, culture, and ethnic origins).

4.    Exhibit sportsmanship/etiquette in all physical activity settings.

**Standard F:**
Value physical activity for health, enjoyment, challenge, self-expression, and/or social interaction:

1.    Enjoy the challenge of working hard and the satisfaction of improving skills.

2.    Seek personally challenging experiences in physical activity opportunities.

3.    Recognize physical activity as a positive opportunity for social and group interaction.

4.    Analyze selected physical activity experiences for social, emotional, and health benefits