Principles of Physical Training-Fitness Plans for All Athletes

Athletic Training Staff and Support Staff

Risk Management and Sports Nutrition

Adaptive Athlete Training

Fitness Training Terms Foundation

Have a Plan – Portfolio design homework

#1 - Steps to Safety 101

- Staff (coaches) and players – **facilities and equipment**

- Staff (athletic Trainers) and players – **injury prevention and care**

- **Emergency Action Plan (EAP)** Steps in case of injury / emergency ***(safety card)***

1. Contact persons (priority list and #'s)
2. Follow up procedure / paperwork-communication-info cards

Sabock, 2011 / Angel examples / ind research

Need TRI for Portfolio (develop)

Risk Management (Portfolio)

- Certified Athletic Trainers/Support ***staff Roles***
- Facility and ***equipment inspection checklist***
- Emergency Plan ***(checklist-card-contact #'s)***
- **Athlete Development**
  1. Physically
  2. Psychologically
  3. Socially
- Long term versus short term concern for student-athlete ***(philosophy and ethics)***

HEAD INJURIES

- **NCAA Concussions:** Don’t hide it, report it, take time to recover video
- ***Youtube ncaa concussion (video 9 min)***

- Head Injuries – concussions ***(nfhs video)***

- NCSS- National Center for Sport Safety
- Youtube ncss parent/athlete concussion

  (video (4 min)

TREATMENT

- **RULE 1 – remove athlete from play**
- Be supportive of athlete's injury
- Get certified trainer / medical staff to evaluate properly asap
- Websites: www.ncaa.org/health-safety
  www.CDC.gov/Concussions

RECOVERY

- **90%** of head injuries will recover fully in **7-10 days** ***(no activity – cannot raise heart rate)***
- **PIAA requires minimum of 7 days** and athlete **must be cleared by physician** – not a coach / parent / student-athlete
- **10% not** – at greater risk during this period **if 2nd head injury occurs = compound original trauma and lengthen overall recovery time**
- ***Better to miss 1 game vs. season - career***

Heat illness prevention

- USF sports med – Dr Eric Coris – beat the heat: tips on preventing heat illness

  http://www.youtube.com/watch?v=IJQUtfQaTDs

- Heat Acclimation Plan ***(nfhs video) OR***

  http://www.youtube.com/watch?v=V5kR04nam-A

- Espn-OTL Jason Stinson story ***(video)***

  http://www.cbsnews.com/video/watch/?id=5276248n and follow up after trial – ESPN OTL

  http://espn.go.com/high-school/football/video/clip?id=6589272

What can we learn – use in Portfolio?

SYMPTOMS

- light headed - weak – dizzy
- muscle cramps
- fatigue
- cold chills
- headaches
- rapid heart rate
- difficulty concentrating
- nauseated

PREVENTION – hydration tips

- 24 ounces of water or sport drink **1 hour before activity**
- 12 ounces of water **30 min before activity**
- Weigh yourself before activity
- Drink 10 ounces **every 15 mins**
- Weigh yourself after activity
- **Replace 16 ounces for every pound of weight lost during activity**

nutrition – guest speaker(s) – add to portfolio

Sports Nutrition vs. Nutrition

**by Kate Nese – pres fall 2016 (Awesome-thanks)*

- **ADD Nutrition** to Portfolio
- **Section H - Physical Training-Fitness Plans**
- **Section I – Risk Management Plans**

- **3 key differences** between athletes and the general publics nutritional needs

1. Athletes need **more calories**
2. Athletes need **more fluids**
3. Athletes need **more protein**

Fueling Your Body

- **Body's order of preference for fuel:**
  1. Carbohydrates
  2. Protein
  3. Fat

- **How much should you eat?**
  - Age, gender, height, weight, and activity level are factors to consider
  - https://www.mysportsdconnect.com/meal-plan-guide-for-athletes/

Nutrient Timing

- **When** you eat is just as important as **what** you eat!
- **Coaches can play a huge role in this**

Making sure the right food is available at the right times

- **Nutrients digest at different rates**

*Carbohydrates are the quickest, followed by protein + fat

*Timing is vital to performance so glycogen stores can be as full as possible

Pre Workout Meals & Snacks

- **Full meals should be eaten 2 hours before exercise**

  **Composed primarily of carbohydrates, a moderate amount of protein and minimal fats*

- **Snacks or smaller meals should be eaten 1 hour before exercise**

  1. *Don't want to eat too much, athlete could feel bloated or "weighed down"*
  2. *Should be primarily carbohydrates*
  3. *Quick energy!*

Avoid Eating Before Working Out

- **Fiber**
  1. *Fiber slows down the speed that glucose enters cells*
  2. *Fiber increases digestion time*

- **Fat**
  1. *Slows down digestion*

- **Protein (limit this)**
  1. *Slows down digestion*
  2. *Makes you feel full, may cause athlete to feel bloated or weighed down*

Post Exercise Eating

- **Goals**
  1. Replenish glycogen stores
  2. Stop further breakdown of muscle

  **This will begin the recovery process!*

- **When to eat:**
  1. **Within 15 minutes:** quick snack (high GI) to begin glycogen replenishment ***= Quick recovery***

  2. **Within 2 hours**: full meal (low GI) *= Foods will digest slowly and keep the athlete fuller longer*

- **Carbohydrates combined with protein** was found to be better for recovery that either nutrient alone

  ******Example: Chocolate Milk***

Supplements

- **Supplements** are always a hot and controversial topic in terms of athletic performance and sports nutrition
- **As coaches,** if your athletes are taking them, need to make sure they are not banned substances
- **Do we even need supplements?**
  - *Studies contradict each other all the time, both sides representing valid arguments– effects of supplementation can be seen to the same extent through food sources*

Food > Supplements

- **Nutrients in supplements can all be supplied to body by food sources**
  - *Often times, convenience is the biggest factor for supplement use*
- **What is bioavailability?**
  - *How well something is absorbed and can be used by its target tissue*
- **Foods have a greater bioavailability than supplements**
  - *Body can absorb nutrients more efficiently from food than supplements*
    - **Example:** Eggs can be 99-100% bioavailable to the body, GREAT protein source, body uses entire egg

Workshop OR Homework (Portfolio) Developing a Safety Plan

- Group (5-7 people) Pick 1 sport – divide into 3 phases

  ***handout** (see next slide - template)*
- Pre season
- In season
- Post season

- Determine facility and equipment needs AND

  Facility-equipment safety checks (what / how / who)

- List Safety concerns for athletes

  concussions, heat-hydration, strains-sprains, Nutrition
- List Trainer / Staff roles-communication
- EAP- emergency action plan (steps = #'s / follow up)

  we will come back and address Adaptive Plan (leave+add)

493 RISK MANAGEMENT PLAN
SPORT:
LEVEL:
SAFETY CARD – make a pocket size version for all to carry always (field and travel)

	PRE-SEASON	IN-SEASON	POST-SEASON
FACILITY & EQUIPMENT SAFETY NEEDS-CHECKS			
ATHLETE SAFETY CONCERNS			
AT STAFF / TRAINING AND STAFF ROLES			
EAP – Emergency Action Plan (steps)			

Adaptive Outreach in Sport Coaching Challenge

- **Inclusiveness within your sport & team**

http://www.youtube.com/watch?v=qaXfFRx5ZWw ***Nike 30sec**

- Rohan Murphy – PSU grad / alum / wrestler

https://www.youtube.com/watch?v=z2zrasNarzU ***(7min ABC)**

https://www.youtube.com/watch?v=8CuAi-U8Gkw

(6min presentation with student reaction)

- **How can we incorporate and educate all?**
- **Let's take a look @ some info + tips**

Adaptive Athletics in Action

- **According to the American with Disabilities Act (ADA) – all people have the right to participate on athletic teams**

- **Coaches are required *to provide reasonable accommodations for athletes with disabilities***
- **Most coaches struggle *with* *ways to successfully include these athletes***
- **Key Ingredient = *having the right attitude*** and a ***willingness to try***

Develop an environment where people recognize everyone's abilities versus disabilities!

Tips for Including Athletes with Disabilities in your program

1. **Embrace the Opportunity** ***(focus on positives)***
2. **Treat the Athlete as an athlete** ***(develop goals)***
3. **Provide opportunities** for the athlete to **be a leader** ***(empower disabled athlete to lead)***
4. **Collaborate with the athlete** to modify sport techniques ***(develop strategies-techs together)***
5. **Learn accommodations** based on the rules of the sport governing body ***(Research – adapt & adjust)***
6. **Have similar expectations** ***(There are more similarities among team members than differences)***
7. **Foster Independence** ***(complete life skills themselves)***
8. **Seed Advice** ***(Research – educate you and team)***

Aaron Moffett, PhD – California State University, San Bernardino

Adaptive Workshop

- **Go back to Risk Management Template**
  1. Group (5-7 people) picks a disabled athlete/sport
  2. Create ways to adapt-include disabled athlete
  3. ***Go back to Teaching Plans (Add to Portfolio)???***

- **Review Your Philosophy**
- **3 developmental areas (Adaptive plan)**
  1. Physical
  2. Psychological
  3. Social

493 ADAPTIVE PLAN - RISK MANAGEMENT PLAN
SPORT:
LEVEL:
brief list of ideas to adapt plan for athletes with disabilities

*ADAPTIVE ATHLETE PLANS	PRE-SEASON	IN-SEASON	POST-SEASON
FACILITY & EQUIPMENT SAFETY NEEDS-CHECKS *ADAPTIVE PLAN			
ATHLETE SAFETY CONCERNS *ADAPTIVE PLAN			
AT STAFF / TRAINING AND STAFF ROLES *ADAPTIVE PLAN			
EAP – Emergency Action Plan (steps) *ADAPTIVE PLAN			

Resources

- **Penn State**, http://www.gopsusports.com/ability/
  - Contact person: Teri Jordan, txj3@psu.edu
  - Sports offered: wheelchair basketball, Track and Field, powerlifting, swimming
  - Team type: Ability Athletics collegiate and wounded warrior outreach

- **Disabled Sports USA**

  http://www.disabledsportsusa.org/resources/videos/

- **National Center on Physical Activity and Disability**

  http://ncpad.org/

Physical Training Seasons

- Training should be first categorized into the different demands during a calendar year

- **Pre season**
- **In season (2 parts or 3-4 / you decide)**
  1. Early season
  2. Peak season
- **Post season**

- ***Portfolio = 1 calendar year (3 categories)***

Workshop OR Homework (Portfolio) Developing a Training Plan

- Take sport – divide into 3 phases – determine calendar dates of year and # of weeks for each
- Pre season
- In season (early and peak)
- Post season

*****(see training plan handout) or next slide**

- List fitness goals for each phase
- List core fitness activities (exercises) for each phase – ***prioritize***
- List frequency and intensity (weekly)
- Develop a basic warm up / cool down routine

493 PHYSICAL TRAINING-FITNESS PLAN
SPORT:
LEVEL:

DATES(YR) / WEEKS(#)			
PRE-SEASON	IN-SEASON (EARLY)	IN-SEASON (PEAK)	POST-SEASON
FIT GOALS			
CORE FIT ACTIVITIES			
FREQUENCY			
INTENSITY			
WARM UP			
COOL DOWN			
NOTES			

Physical Training Basics

- **Fitness for Sport** is the ability to *meet the physical demands* of the sport to perform optimally

- **Physical fitness** is not a permanent condition – it is a *state that the body is in at any particular time*

- Therefore, **fitness is transient** – coaches use of *training cycles* so that athletes can be *at peak condition for major competitive events*

- ***Fitness Training Goals and Objectives***

Benefits of Training

- **Better performance**
- *Less fatigue* in long-duration contests
- *Quicker recovery* after strenuous practice or competitive play
- *Less muscle soreness*
- Greater ability to practice technical and tactical ***skills longer and better***

Benefits continued

- Less ***susceptibility to injury***
- Quicker ***recovery*** from injury
- ***Prevention*** of mental fatigue and ***improvement of concentration***
- Greater ***self-confidence*** knowing that one is physically prepared
- ***Greater enjoyment*** of playing as a result of performing better, winning more, and feeling less fatigued

Components of physical fitness

- **ENERGY FITNESS –** an athlete's body needs *energy to power the muscles* to meet the demands of the sport - **2 ENERGY SYSTEMS**
- **ANAEROBIC –** *for immediate movement and very intense exercise (means without oxygen)* about 2 mins – sprinting / power lifting
- **AEROBIC –** *for more enduring and less intense activity (with oxygen)* after 2 mins – long distance and long durations events

Components continued

- **MUSCULAR FITNESS –** muscles are the workhorses that create athletic movement

- **Muscular fitness** is the ability of muscles to meet the demands of the sport with **optimal** ***strength, endurance, speed, power and flexibility***

- As a coach – you want to know what is the **optimal for each and how to best train** in your specific sport

MUSCULAR STRENGTH

- **STRENGTH –** the ***maximum amount of force*** that a muscle can generate in a single effort

- Sports such as distance running require less muscular strength

- Wrestling – football require more muscular strength

Muscular Endurance

- **ENDURANCE -** is the ability of a muscle to ***repeatedly contract or sustain a continuous contraction*** involving less than maximum force

- Typically it is measured by the ***number of repetitions a person can perform***

  (push ups) or the length of time a person can hold a contraction with a designated force ***(holding down a push up)***

SPEED

- **SPEED –** is the ability to move the body or parts of it very quickly / it's the ***distance moved divided by time***

- Speed is a ***combination of reaction time and movement time***

- **Myth –** speed is inherited / not entirely true / ****it can be <u>improved</u> through proper training***

SPEED continued

- **Reaction time –** period from when a stimulus is perceived to the beginning of the movement (pitcher throws / batter begins swing)

Quickness often referred to as reaction time

- **Movement time –** period from the beginning of the movement to the end of the movement ***speed is the movement time***

MUSCULAR POWER

- **POWER –** is the ability to ***exert muscular strength quickly***

  ****It is strength and speed combined***

- When you ***increase strength and speed*** in your training program ***= you increase power***

Other Muscular Fitness Terms

- **Flexibility –** range of motion through which the body's joints are able to move
- **Balance –** the ability to maintain a certain posture or move without falling
  1. ***Static balance* –** balance while ***stationary***
  2. ***Dynamic balance* –** balance while ***moving***

- **Agility –** ability to start and stop, change speed, direction quickly with precision

Training Plan Workshop - Individual Determine Your Sports Demands

- Develop a chart to determine the unique demands of your sport in regards to energy and muscular fitness

	ENERGY FITNESS				MUSCULAR FITNESS		
SPORT OR ACTIVITY	Aerobic	Anaerobic	Flexibility	Strength	Endurance	Speed	Power

- Individually assess your sports
- Designate low / medium / High for each area
- Done – review (sports) – adjust – reflect - use

Designing a Training Program

- **6 Decisions in Design Phase**

1. **Choice** of exercise
2. **Order** of exercise
3. **Intensity** of exercise
4. **Volume** of exercise
5. **Frequency** of exercise
6. **Length of rest period** ***(rest is a workout)***

Start and Finish Basics

- **<u>Warm up</u> (3 phases)**
  1. Aerobic warm up (start slow)
  2. Stretching (after warming up muscles)
  3. Technical skill warm up (practice specific skills of the sport to target specific muscles)

- **<u>Cool down</u> (2 phases)**
  1. Aerobic phase (slow down – same as above)
  2. Stretching phase (prevent soreness)

Training Principles

- **Specificity Principle –** concept that the best way to develop physical fitness for your sport is to ***train the systems and muscles as closely as possible to the way they are used in your sport*** (run for running)
- ***Note –*** cross training or doing another sport-activity can help overall performance and prevent overtraining

Training Principles 2

- **Overload Principle –** to improve fitness levels, athletes must ***do more than what their bodies are use to doing***
- You can apply overload in ***duration, intensity, or both***
- ***Example –*** asking a runner to run faster time for normal distance = overload of intensity

- Other examples?

Training Principles 3

- **<u>Progression Principle</u> –** to steadily improve the fitness levels of your athletes, you must ***continually increase the physical demands to overload their systems***

- ***Key* –** find perfect balance (not too quickly or demand too little)

Training Principles 4

- **Diminishing Returns Principle –** as athletes become fitter, the amount of improvement is less as they approach their genetic limits

- ***Thus* –** as fitness levels increase, more work or training is needed to make the same gains
- ***Note* –** improvement will not continue at the same rate as athletes become fitter (realistic goals / peaking / tapering / starting slow)

Training Principles 5

- **Variation Principle** (several meanings)
  1. ***Variation in intensity* –** after athletes have trained hard for several days, they should train lightly-give bodies a chance to recover
  2. ***Periodization* –** use of training cycles to vary the intensity and volume to help athletes to achieve peak fitness for competition
  3. ***Variation of activities*** (exercises) to not overstress body and to excite with new

Training Principles 6

- **Reversibility Principle** (use it or lose it) – when athlete stops training levels will disappear

- Rate of decline depends on many factors – length of training / muscle groups / levels

- ***General rule* –** complete inactivity results in a loss of 10% per week of fitness level
- ***Key* –** maintain moderate levels year round with specific goals during different phases

Training Principles 7

- **Individual Difference Principle –** simple – ***every athlete is different and responds differently*** to the same training activities

- **Assess individually** each athlete
- **Set realistic goals** for max and min standards
- **Develop individual training** opportunities
- **Connect with rewards system** (individual and team)

Training Principles 8

- **Moderation Principle** (slow to fast) - training is a slow, gradual process
- Give athletes time to progress
- **Use 8 principles to design realistic program**
- Slowly build up (peak in season) and back down (post season)
- Make Training Fun – avoid overtraining
- Avoid using training as punishment
- **Encourage – be positive – reward effort**

Workshop OR Homework (Portfolio) Developing a Training Plan

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*****(see training plan handout) or next slide**

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