



**ISSF**

# **International Shooting Sport Federation**

**ISSF**

**National Coach (first level)**



**SPORT SCIENCE**

# Sport Science

## ISSF National Coach (first level)

### Contents

Chapter 1 – Motivational climate

Chapter 2 – Performance profiling

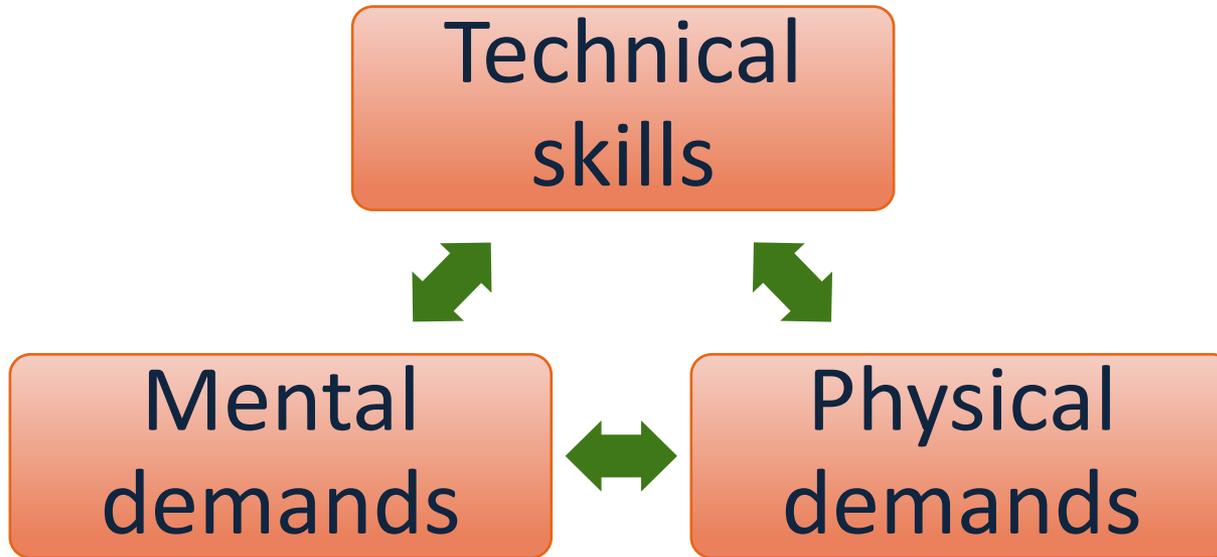
Chapter 3 – Goal setting

Chapter 4 – Communication

Chapter 5 – Instructions and feedback

Chapter 6 – Principles of physical training

# Knowledge About your *Sport*



Competitive structure  
(annual, quadrennial)

# Knowledge About your Performer

- Age and ability
- Stage of development
- Aspirations
- Strengths and weaknesses
- Level of motivation and commitment
- Time availability from work, school, etc.

# What Is Motivation?

- Motivation is the *direction* and *intensity* of effort
  - *Direction of effort* refers to whether an individual seeks out, approaches, or is attracted to situations
  - *Intensity of effort* refers to how much effort an individual puts forth in a situation
- Direction and intensity of effort are closely related

# Motivation

(Modified from Weinberg & Gould, 2019)

**Personal factors**

- Personality
- Needs
- Interests
- Goals

**Personal/  
situational factors**



**Individual motivation**

**Situational factors**

- Coach style
- Facility attractiveness
- Sport achievements

# Major Motives for Sport Participants

- Improving skills
- Having fun
- Being with friends
- Experiencing thrills and excitement
- Achieving success
- Developing fitness

# Three main theories of motivational processes

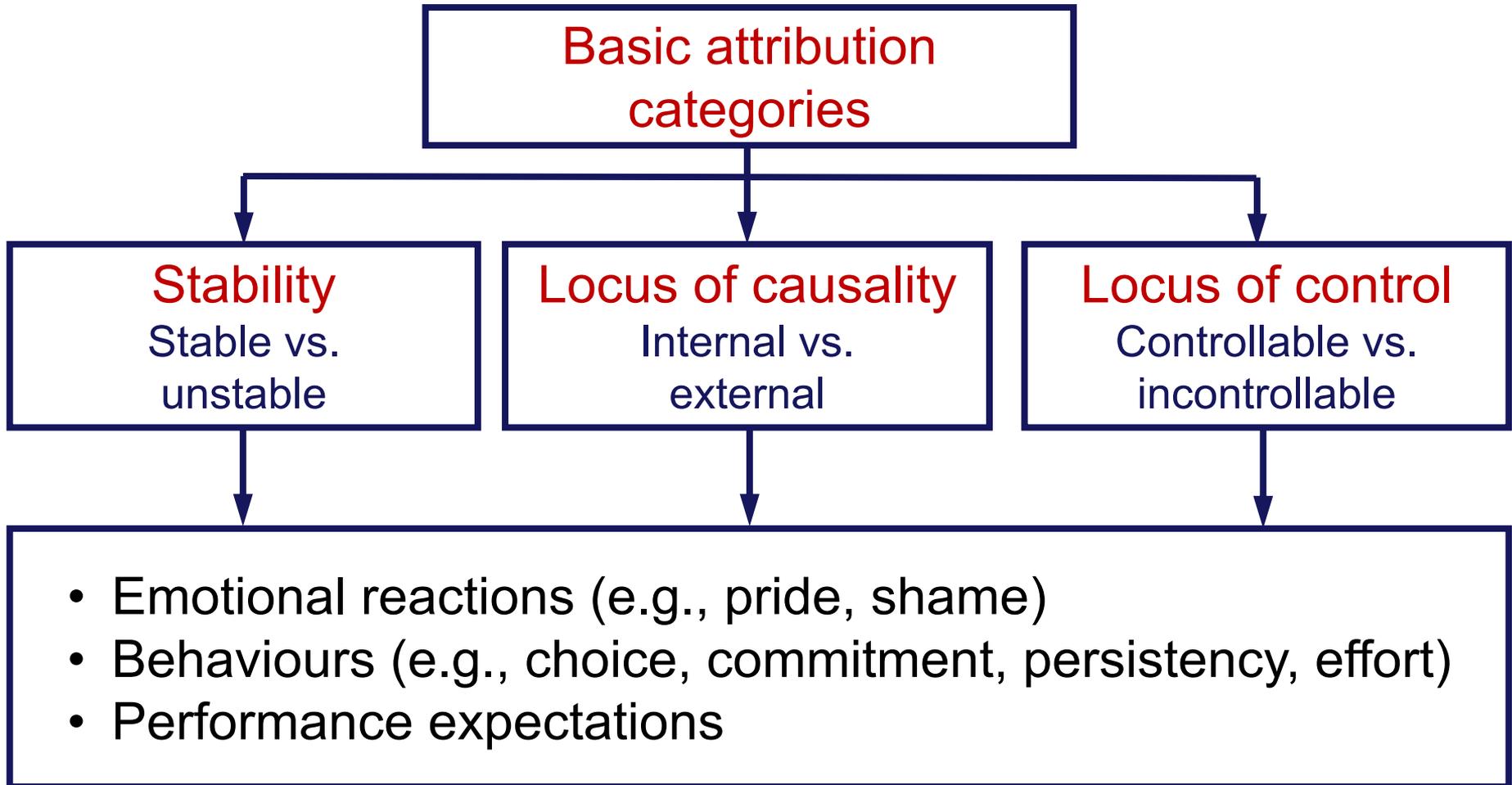
```
graph TD; A[Three main theories of motivational processes] --- B[ ]; B --- C[attribution]; B --- D[achievement goal]; B --- E[self-determination];
```

attribution

achievement  
goal

self-  
determination

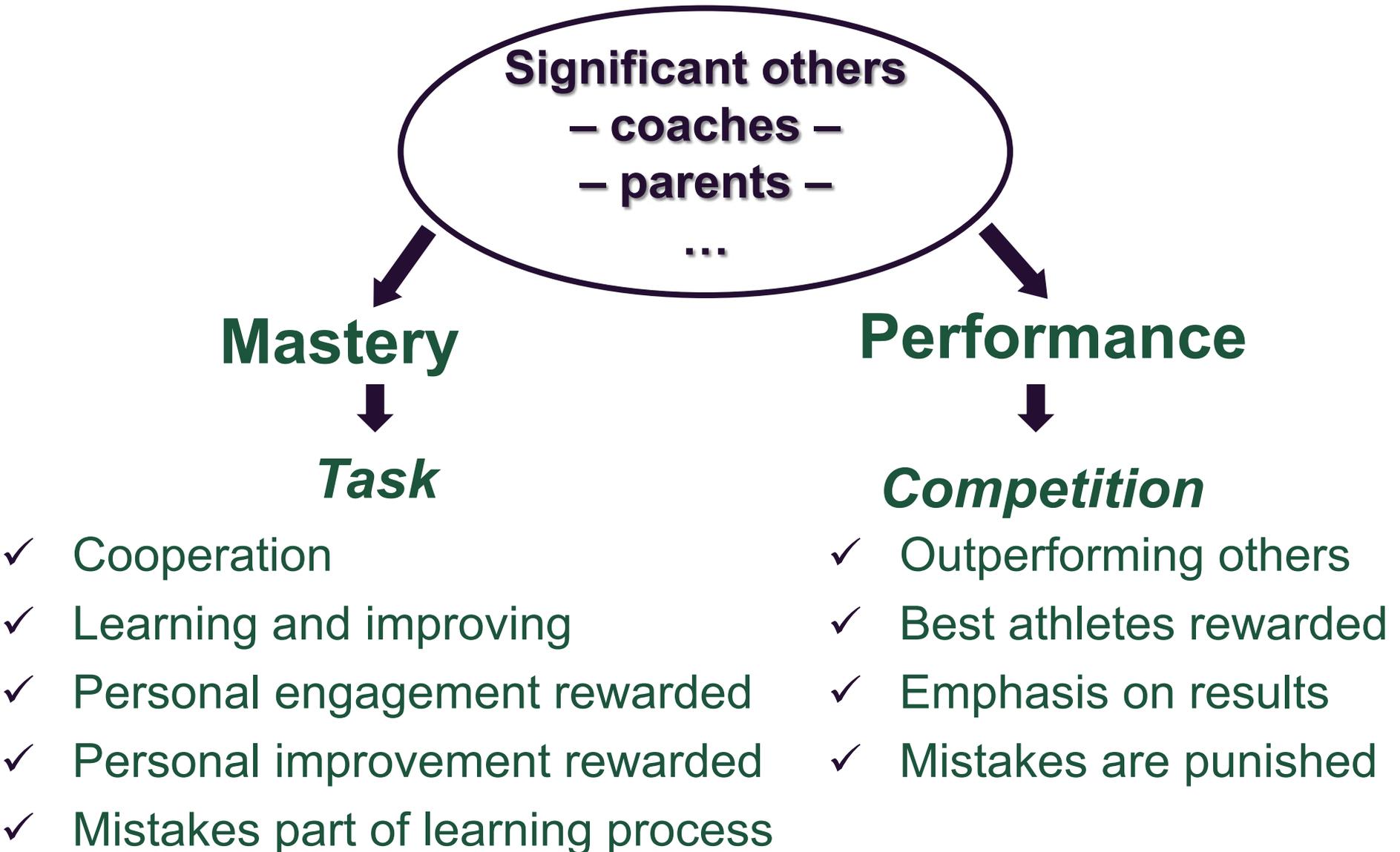
# Attribution Theory



# Achievement Goal Theory

- **Performance (ego) goal orientation**  
(or competitive goal orientation): Comparing performance with and defeating others
- **Mastery (task) goal orientation** Improving relative to one's own past performances

# Motivational Climate



# Achievement Goal Theory

## Skills development through

**T**ask

**Varied and challenging**

**A**uthority

**Responsibility and independence for learning**

**R**ecognition

**Personal recognition for accomplishments**

**G**rouping

**Cooperative learning and peer interaction**

**E**valuation

**Based on mastery of tasks and improvement**

**T**ime

**Time requirements attuned to individual abilities**

# Self-determination theory

**Coach  
behaviour**

**Basic  
psychological  
needs**

- *autonomy*
- *competence*
- *relatedness*

**Intrinsic  
motivation**

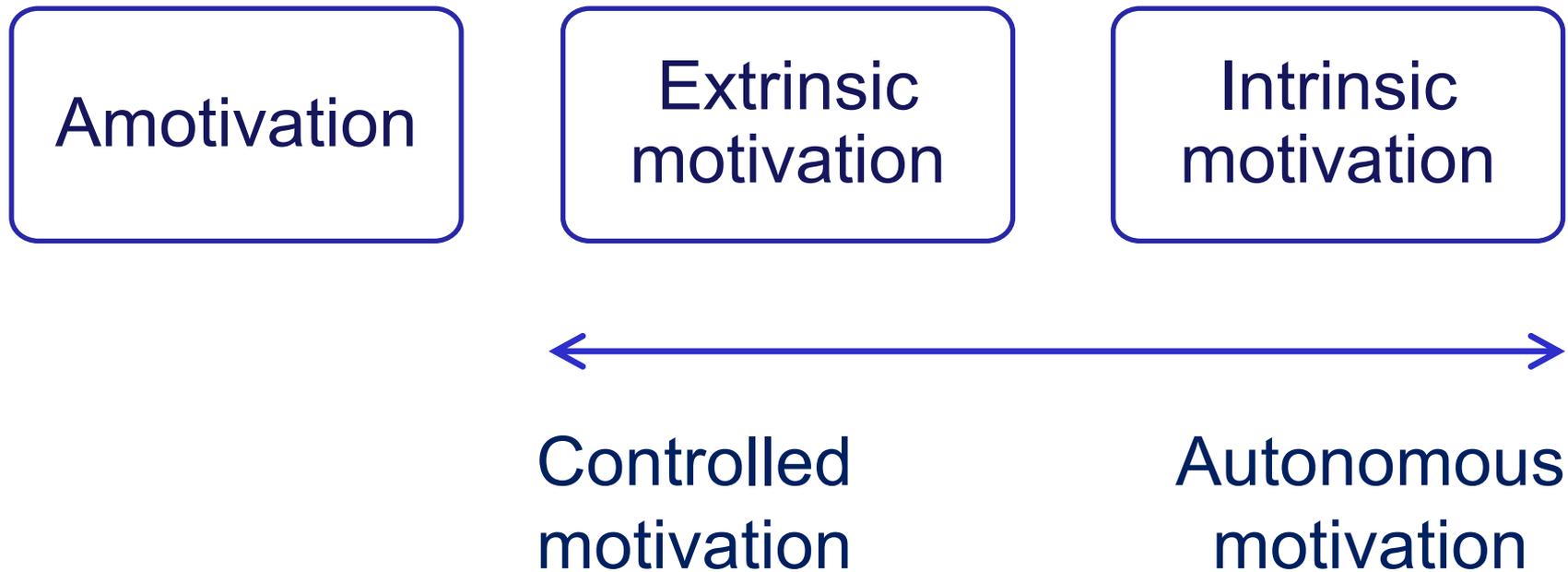
- *knowledge*
- *accomplishment*
- *stimulation*

**Adaptive outcomes**

- *autonomous behaviour*
- *engagement*
- *persistence*
- *enjoyment*
- *well-being*
- *optimal functioning*
- *sportsmanship*

.....

# The self-determination continuum



# Self-determination theory

## Basic psychological needs satisfaction

Encourage initiative

Involve in the decision-making process

Offer opportunity to choose goals

Give a rationale for task-engagement

Use non-judgemental behaviour

Consider the athlete's perspective

# **Sport Science**

## **ISSF National Coach (first level)**

### **Contents**

Chapter 1 – Motivational climate

Chapter 2 – Performance profiling

Chapter 3 – Goal setting

Chapter 4 – Communication

Chapter 5 – Instructions and feedback

Chapter 6 – Principles of physical training

# Athlete-Coach relationship

## *Potential problems*

- Athlete usually has a relatively passive role in the assessment process and skill acquisition/improvement
- Locus of control is external => loss of intrinsic motivation

# PERFORMANCE PROFILING

(Butler & Hardy, 1992)

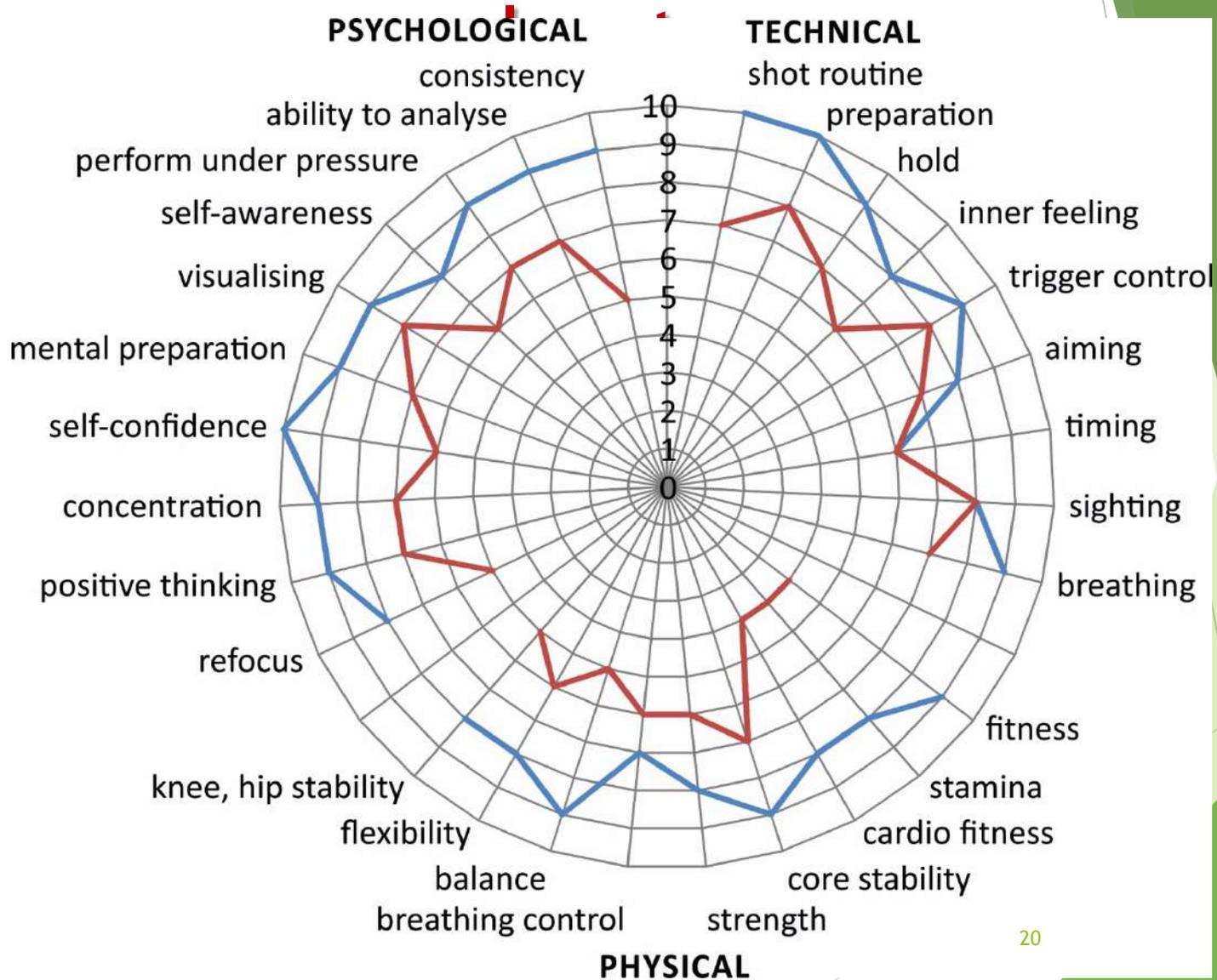
## *Proposed solution*

- Individuals make sense of the world by constructing personal theories
- Personal theories are unique and individual

# Performance Profiling Main Objectives

- ✓ To develop awareness of important qualities essential for success in a sport
- ✓ To consider performance from a joint coach and athlete perspective
- ✓ To aid in identifying an appropriate intervention in desired areas of change
- ✓ To assist in training programme focused on best performance
- ✓ To monitor changes over time

# Performance Profile of a rifle



# Performance Profiling Methodology (1/2)

## ***Stage 1: Introducing the Idea***

- increase awareness of athlete's current state
- show completed performance profiles
- no right or wrong

## ***Stage 2: Eliciting Constructs***

- characteristics that 'ideal' performers possess
- individual/squad brainstorm constructs
- individuals select pertinent qualities
- ideal qualities rated from 0-10

# Performance Profiling Methodology (2/2)

## ***Stage 3: Assessment***

- rate current perception
- 0-10 scale

## ***Stage 4: Establishing scores***

- subtract current from ideal

## ***Stage 5: Prioritise targets and link to goal setting***

# Performance Profiling (1/2)

## *Summary*

*PP serves to illuminate:*

- The athlete's perspective
- Areas of perceived strength
- Areas of perceived need for improvement
- The athlete's vision of what constitutes a top performance
- Where the athlete might resist improvement

# Performance Profiling (2/2)

## *Summary*

*PP serves to illuminate:*

- Athlete and coach discrepancy
- Targets for goal setting
- Performance analysis
- Progress
- Attitudes towards training

# Performance Profiling Promotes

- ✓ Intrinsic Motivation
- ✓ Self-evaluation
- ✓ Goal-setting
- ✓ Decision-making
- ✓ Perceptions of control
- ✓ Matching interventions to the individual

# **Sport Science**

## **ISSF National Coach (first level)**

### **Contents**

Chapter 1 – Motivational climate

Chapter 2 – Performance profiling

Chapter 3 – Goal setting

Chapter 4 – Communication

Chapter 5 – Instructions and feedback

Chapter 6 – Principles of physical training

# WHAT ARE GOALS?

---

- **Goals** – are like magnets that attract us to higher ground and new horizons. They give our eyes a focus, our mind an aim, and our strength a purpose. Without their pull, we would remain forever stationary, incapable of moving forward . . . A goal is a possibility that fulfills a dream (Lessin, 1999)

# Defining Goals and Types of Goals (1/2)

- ▶ **Subjective goals:** General statements of intent such as having fun or doing your best
- ▶ **Objective goals** (scientific definition): Attaining a specific *standard* of proficiency on a task, usually in a specified *time*

# Defining Goals and Types of Goals

(2/2)

- ▶ **Outcome goals:** Focus on a competitive result of an event (e.g., beating someone)
- ▶ **Performance goals:** Focus on achieving standards of performance or objectives independently of other competitors—usually making comparisons with one's own previous performance
- ▶ **Process goals:** Focus on the actions an individual must engage in during performance to execute or perform well

# Why Goal Setting Works

## ▶ **Indirect thought process view**

Goals influence performance indirectly by affecting psychological factors, such as anxiety, confidence, and satisfaction.

## ▶ **Direct mechanistic explanation**

Goals

- ▶ direct attention to the important elements of the skill
- ▶ mobilize performers' efforts
- ▶ prolong performers' persistence
- ▶ foster the development of new learning strategies

# Principles of Goal Setting

## SMARTER Goals

- ▶ Specific
- ▶ Measureable
- ▶ Action oriented and agreed
- ▶ Realistic and challenging
- ▶ Time-phased
- ▶ Exciting/Enjoyable
- ▶ Recorded and Re-evaluated

# GOAL SETTING PROCESS

---



# **Sport Science**

## **ISSF National Coach (first level)**

### **Contents**

Chapter 1 – Motivational climate

Chapter 2 – Performance profiling

Chapter 3 – Goal setting

Chapter 4 – Communication

Chapter 5 – Instructions and feedback

Chapter 6 – Principles of physical training

# Communication

- ▶ Much of human interaction consists of trying to influence others' thoughts and behaviors
- ▶ Communication occurs frequently in sport contexts:
  - ▶ Athletes interact with teammates, opponents, officials, and coaches
- ▶ Coaches influence athletes by creating a good environment in which athletes develop abilities and skills to succeed
- ▶ Communication process involves a series of strategies to effectively influence the

# Communication

- ▶ You can communicate without motivating but it is impossible to motivate without communicating.

-John Thompson, former Georgetown University men's basketball coach

- ▶ It is not what you tell them—it's what they hear.

-Red Auerbach, former Boston Celtics championship coach

# Communication

## Good communication skills

- ▶ are a key factor that helps improve performance
- ▶ play a key role in achieving personal growth in life and sport

# Communication Keys

- ▶ All communication contains *content* (what is said) as well as *relational* (how we felt about the person's message) information

# Communication

## Sending Messages Effectively (1/4)

- ▶ Convey rationales
- ▶ Make verbal messages clear and concise
- ▶ Be direct
- ▶ Be complete and specific
- ▶ Be clear and consistent

# Communication

## Sending Messages Effectively (2/4)

- ▶ Separate fact from fiction
- ▶ Focus on one thing at a time
- ▶ Deliver messages immediately
- ▶ Be supportive
- ▶ Be empathetic by “placing yourself in the shoes” of your athletes

# Communication

## Sending Messages Effectively (3/4)

- ▶ Physical appearance, posture, gestures, and voice are important components of **nonverbal** messages
- ▶ **Nonverbal communication:**
  - ▶ 50 to 70% of all communication is nonverbal
  - ▶ Nonverbal messages are harder to hide

# Communication

## Sending Messages Effectively (4/4)

- ▶ Be consistent with your nonverbal messages
- ▶ Reinforce with repetition
- ▶ Make messages understandable and appropriate to the receiver's frame of reference
- ▶ Use feedback to make sure that your message has been interpreted correctly

# Communication

## Receiving Messages Effectively (1/3)

### Active listening

- ▶ Ask questions
- ▶ Paraphrase
- ▶ Attend to main and supporting ideas
- ▶ Acknowledge and respond
- ▶ Give appropriate feedback
- ▶ Pay attention to the speaker's total communication (verbal and nonverbal)

# Communication

## Receiving Messages Effectively (2/3)

### Keys to active listening

- ▶ Mentally prepare to listen
- ▶ Don't mistake hearing for listening
- ▶ Paraphrase what the speaker said

# Communication

## Receiving Messages Effectively (3/3)

### Supportive listening

- ▶ Communicate that you are *with* the speaker and value his or her messages and perspective

### Keys

- ▶ Use supportive behaviours as you listen
- ▶ Use confirming behaviours as you listen
- ▶ Use both verbal and nonverbal listening behaviours

# Communication

## The “Sandwich Approach” to Giving Feedback

- ▶ A positive statement
- ▶ A future-oriented instruction
- ▶ A compliment

# Communication

## The “Sandwich Approach” to Giving Feedback

Find something the athlete did right and reinforce it



Tell the athlete how to correct a mistake – emphasize the good things that will happen as a result



End with a general performance-related positive statement



# Communication

## Example of the Sandwich Approach

- ▶ **Positive statement**  
“Linda, it’s great to see you’re really working hard”
- ▶ **Future-oriented statement**  
“Next time try to slow down and pay attention to the timing of your movement”
- ▶ **Compliment**  
“You’re getting there, Linda; keep it up”

# The GROW model of communication

(modified from Whitmore, 2009)

## Goal

- Short term and long term goals (e.g., “What would you like to achieve?”)

## Reality

- The current situation (e.g., “What have you tried so far?”)

## Options

- Alternative strategies or courses of action (e.g., “What could you do?”)

## What

- What is to be done (e.g., “What will you do after this conversation?”)

# **Sport Science**

## **ISSF National Coach (first level)**

### **Contents**

Chapter 1 – Motivational climate

Chapter 2 – Performance profiling

Chapter 3 – Goal setting

Chapter 4 – Communication

Chapter 5 – Instructions and feedback

Chapter 6 – Principles of physical training

# Verbal instructions

## ► Amount - Accuracy - Verbal cues

- Cues should clearly direct the learner's attention to the critical aspects of a skill or of environmental factors
- Cues should contain only a few words
- Cues should contain “action words” that indicate what a performer must accomplish
- Cues should be precise and include quantitative information when appropriate
- Additional cues can be added as learning progresses
- Learners should be encouraged to repeat cues sub-verbally when they execute
- Cues should be repeated frequently, especially in

# Visual information

---

- Use novices for demonstration
- Supply learners with the model's feedback
- Use models similar to observers
- Use members of a group as learning models
- Use peer teaching
- Mix novice and expert demonstrations
- Provide demonstrations before and during practice
- Use effective view angles
- Use the correct speed

# Feedback

---

- Use constructive feedback
- Reward successful approximations
- Reward performance
- Reward effort
- Use questioning
- Use appropriate timing and frequency

# Cognitive Phase of Learning

## Instructions & feedback

- ▶ Facilitate the athlete's development of a basic movement pattern by clearly communicating the critical aspects of the skill
- ▶ Verbal cues short and precise
- ▶ Visual information

# Instructions & feedback

- ▶ Focussed on the movement pattern and on the proprioceptive feelings while performing the skill

## **Autonomous Phase of Learning**

# Instructions & feedback

- Help athletes maintain their level of skill and motivate them to further improve

# Monitoring Specific Behaviours

- ▶ Direct observation
- ▶ Behavioural checklists
- ▶ Athlete self-monitoring
- ▶ Videotape of practice and competition
- ▶ Post-performance evaluation

# Error Correction

- ▶ Compare current execution with correct execution
- ▶ Select which error to correct—only one at a time
- ▶ Identify the cause(s) of the error and what to do to correct it

# Feedback can create dependency

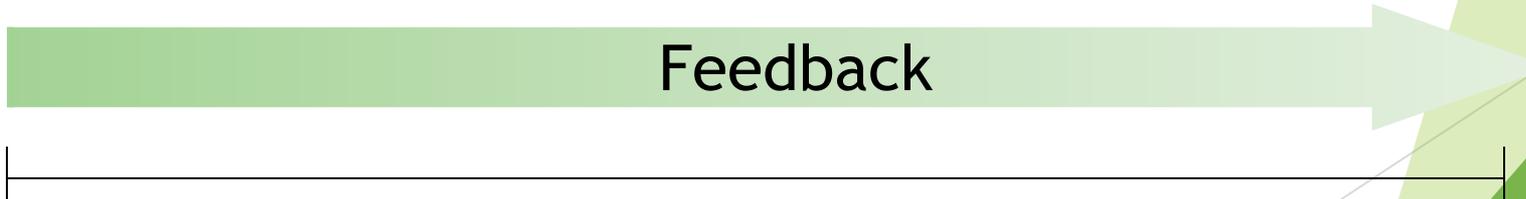
Frequent feedback for a long period of time can lead to dependency

## To prevent dependency

### Faded Feedback

High

Gradually reduced (faded)



Feedback

Low skill level  
level

High skill

# To prevent dependency

## Bandwidth Feedback

Incorrect execution: feedback provided

Correct execution: no feedback provided

Incorrect execution: feedback provided

## Summary Feedback



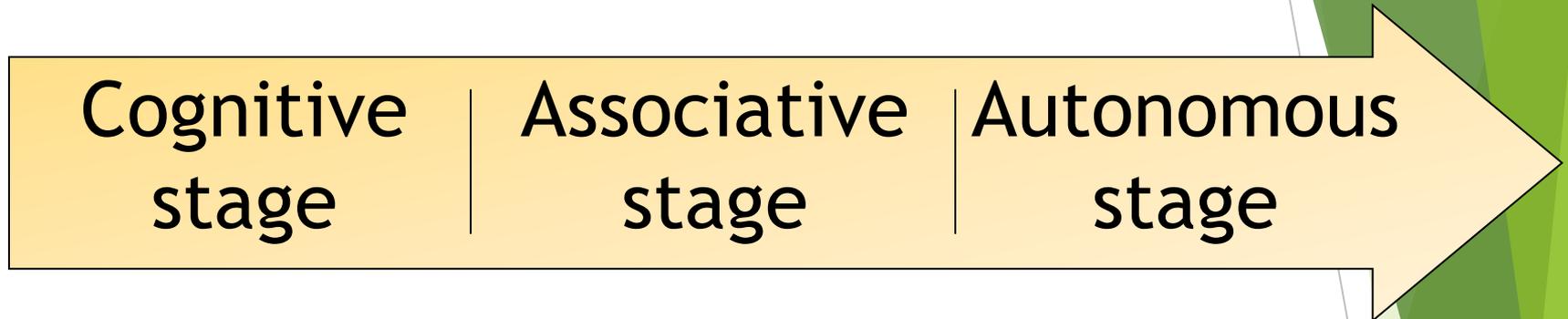
Feedback

Feedback

58

Feedback

# Feedback in the Learning Process



**Cognitive stage**

**Feedback is fundamental**

**Associative stage**

**Faded, bandwidth, or summary feedback**

**Autonomous stage**

**Feedback withdrawal**

# **Sport Science**

## **ISSF National Coach (first level)**

### **Contents**

Chapter 1 – Motivational climate

Chapter 2 – Performance profiling

Chapter 3 – Goal setting

Chapter 4 – Communication

Chapter 5 – Instructions and feedback

Chapter 6 – Principles of physical training

# Definition of key terms (1/3)

## *Health-related fitness*

Physical capacities that contribute to health: cardiorespiratory endurance, muscular strength, muscular endurance, flexibility, and body composition.

## *Cardiorespiratory endurance*

The ability to perform prolonged dynamic exercises, involving large muscles, at moderate to high intensity levels.

## *Muscular strength*

The amount of force a muscle can produce with a single maximum effort.

# Definition of key terms (2/3)

## *Muscular endurance*

The ability of a muscle to contract or contract repeatedly over a long period of time.

## *Speed*

The ability to perform a movement in a short period of time.

## *Flexibility*

The ability to move the joints through their full range of motion.

## *Power*

The ability to exert force rapidly, based on a combination of strength and speed.

# Definition of key terms (3/3)

## *Reaction and movement time*

The ability to respond and react quickly to a stimulus.

## *Coordination*

The ability to perform motor tasks accurately and smoothly using body movements and the senses.

## *Balance*

The ability to maintain equilibrium while moving or while standing still.

## *Agility*

The ability to change the position of the body quickly and accurately.

# Adaptability to Individual Differences

## Individual characteristics

- Initial fitness level
- Previous experience
- Age
- Gender
- Goals
- Motivation

**IMP.:** Customize the training programme according to the performer's needs and abilities.

# Main principles of physical training

**S**pecificity

**P**rogression

**O**verload (**F**requency **I**ntensity **T**ime **T**ype)

**R**ecovery

**T**edium

# Specificity

...is needed to train the right:

- **muscles**
- **type of fitness** – endurance, strength, flexibility, balance... a combination of...
- **skills** – specific shooting techniques

Individuals respond differently to the same exercise or training load. Training must be adapted to meet the needs of the athlete.

# Progression

- When the organism adapts, the overload must be increased to make training more difficult
- This implies gradually increasing the amount, frequency, intensity, and duration of the exercise

# Overload

To improve it is necessary to apply greater demands on the organism

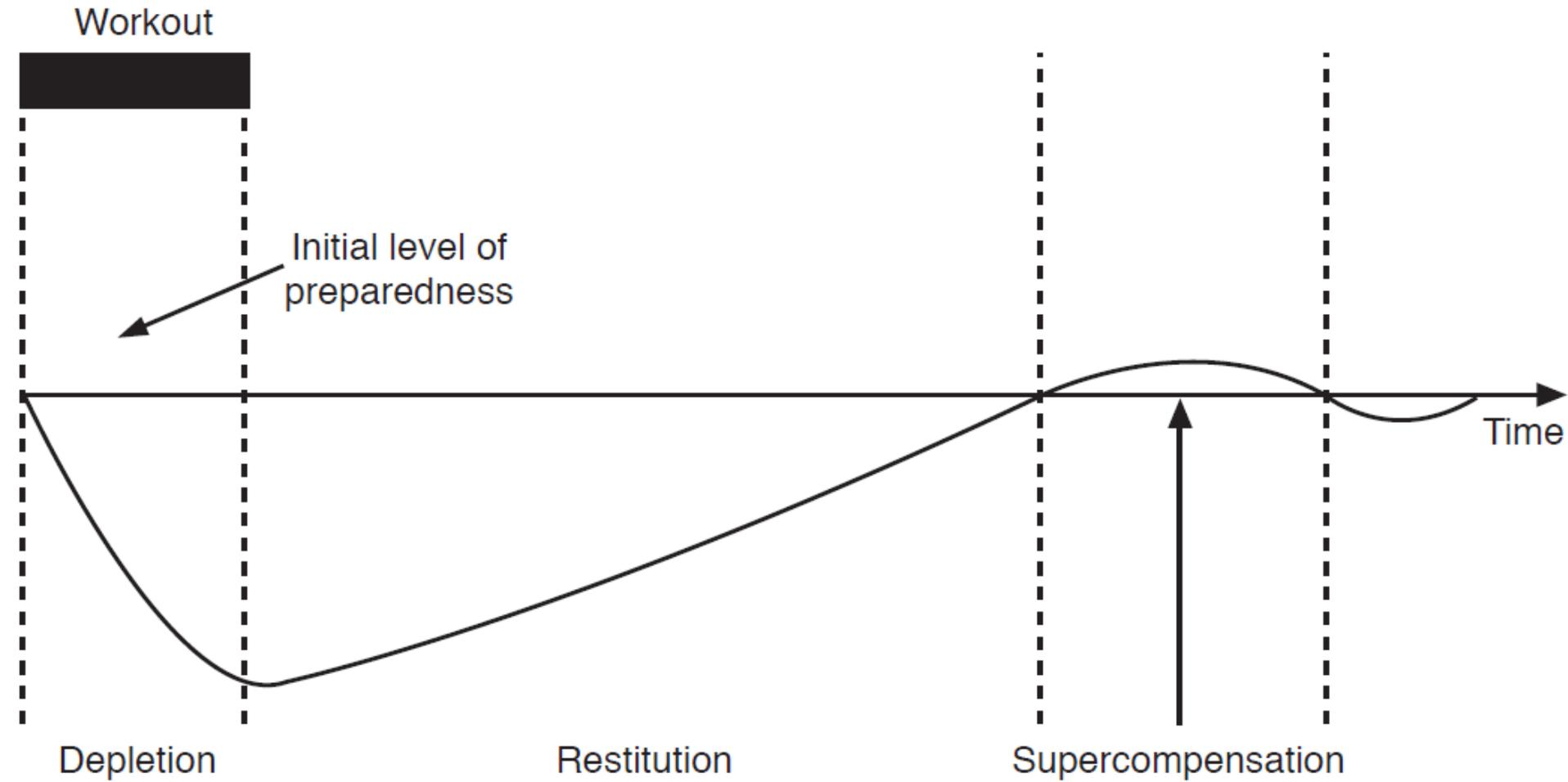
## Four ways to achieve overload

- **F**requency – how often
- **I**ntensity – how hard
- **T**ime (or duration) – how long
- **T**ype – kind of training

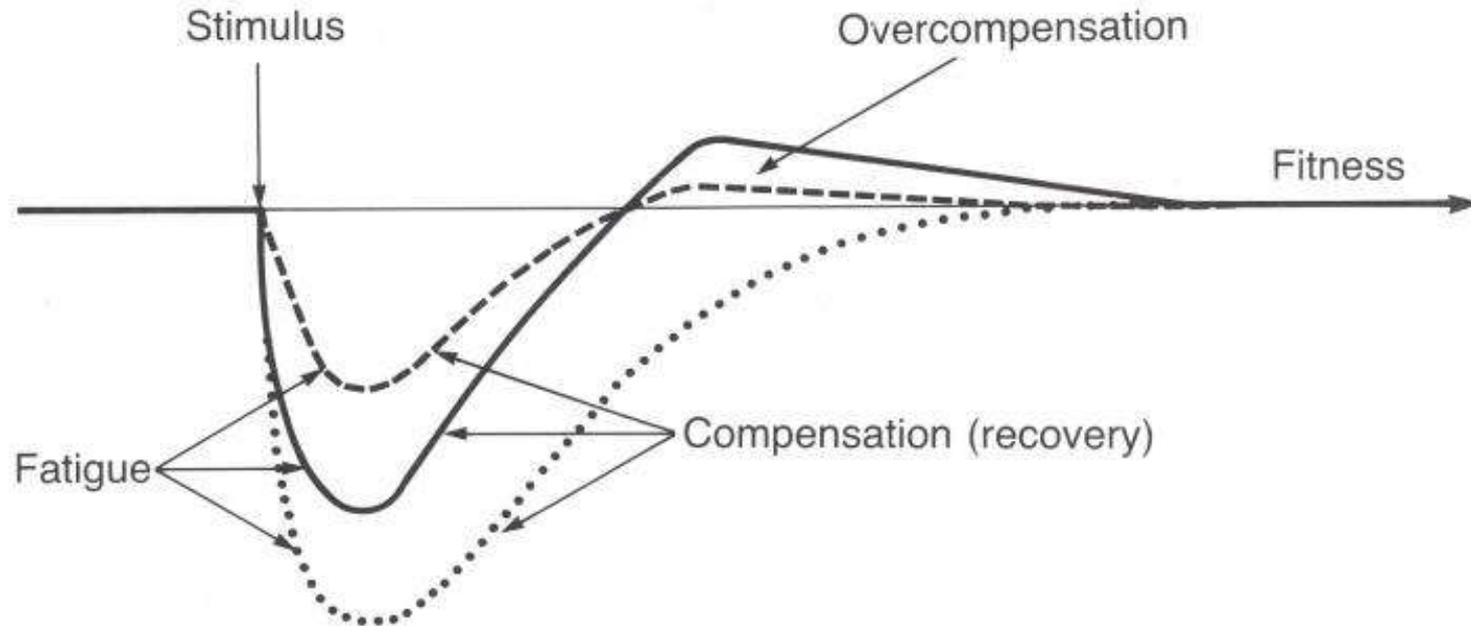
# Recovery

- ▶ The organism adapts to a specific training stimulus over time until a plateau is reached
- ▶ Changes in training and recovery periods are needed to continue progressive loading
- ▶ To enable recovery, training sessions must alternate between heavy, light, and moderate

# Exercise & Recovery



# Exercise & Recovery

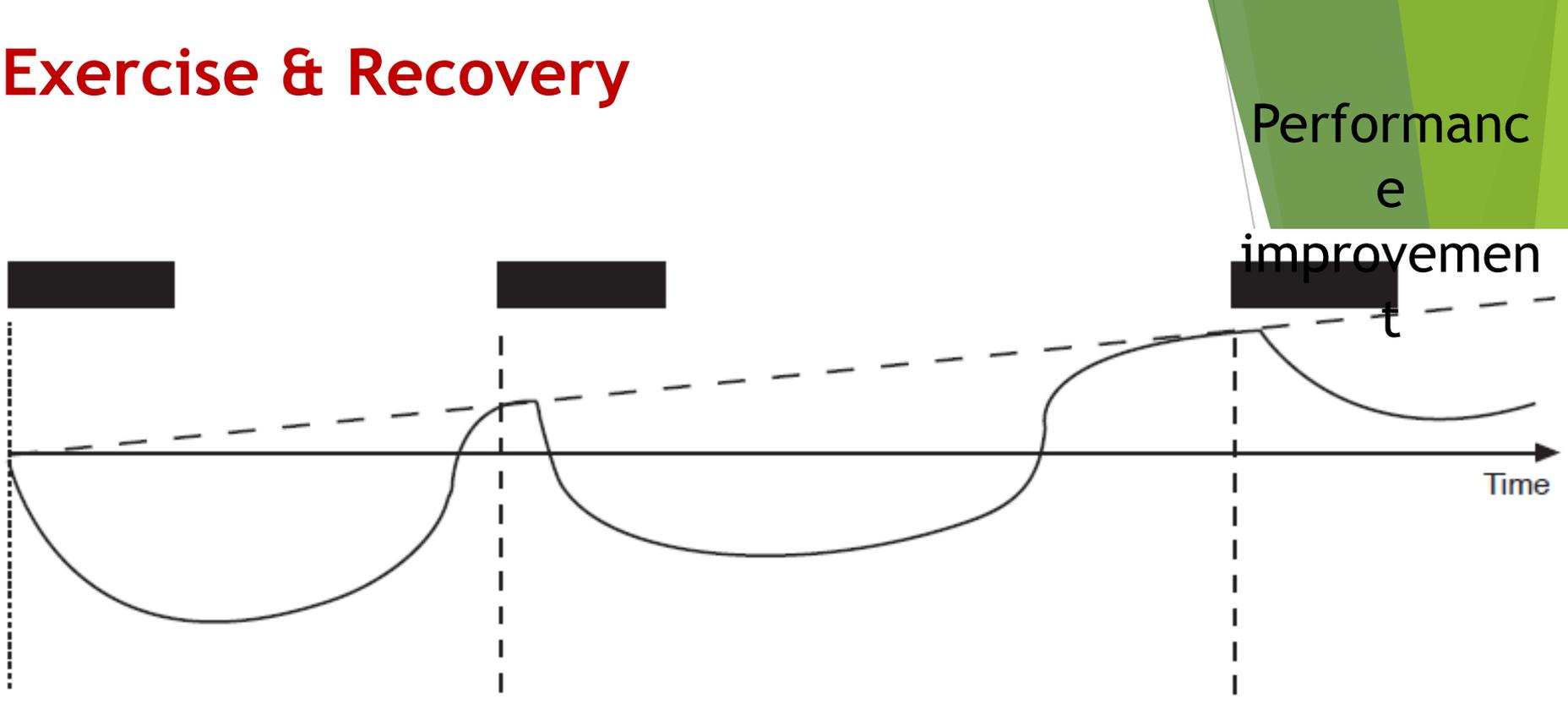


## KEY

- Training too easy
- Training adequate
- ..... Training too hard

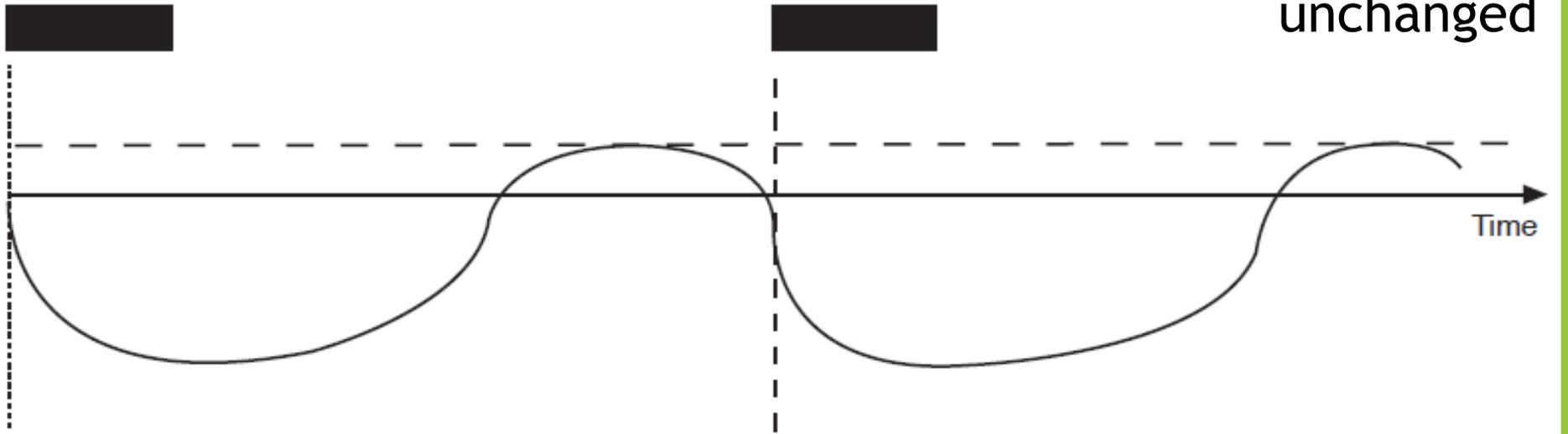
Different training loads have different effects on the athlete's recovery

# Exercise & Recovery



The intervals are optimal and the subsequent workouts match with the supercompensation phase

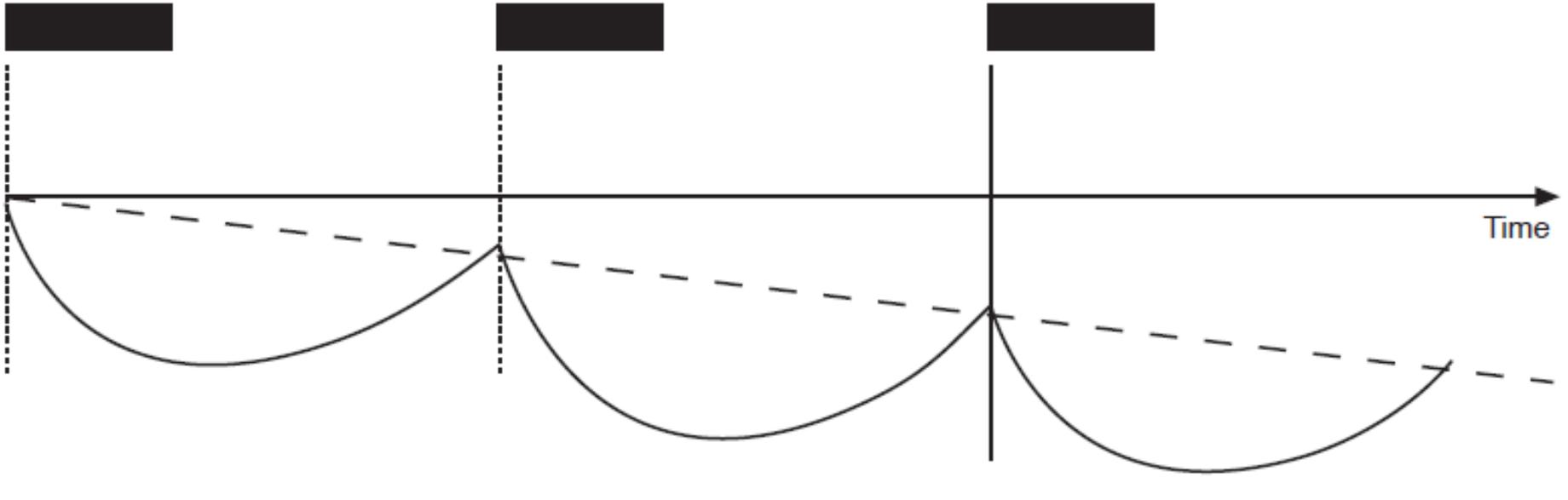
# Exercise & Recovery



The intervals are too long and there is no stable training effect

# Exercise & Recovery

Performance decrease



The intervals are too short and the level of athlete preparedness decreases due to accumulated fatigue

# Tedium

- It is important to vary training to prevent boredom
- Training should be enjoyable
- **Variety is the key** – Include a variety of training methods and vary the type of activity