SPECIFIC ADAPTATION

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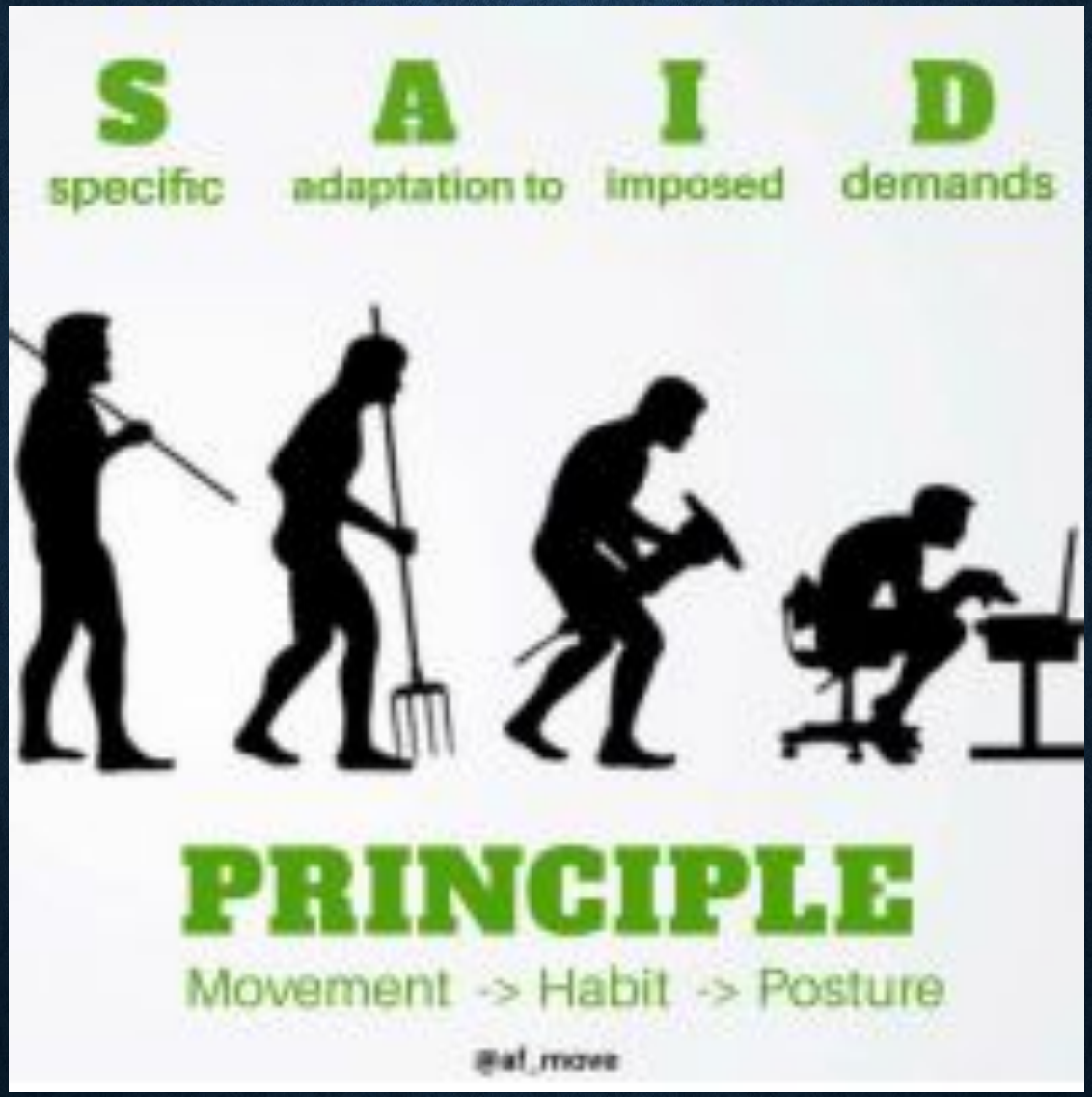
INTRODUCTION

- **Adaptation**, in biology, the process by which a species becomes fitted to its environment; it is the result of natural selection's acting upon heritable variation over several generations. Organisms are adapted to their environments in a great variety of ways: in their structure, physiology, and genetics, in their locomotion or dispersal, in their means of defense and attack, in their reproduction and development, and in other respects.


S A I D
specific adaptation to imposed demands
PRINCIPLE
Movement -> Habit -> Posture
@al_move

SAID{SPECIFIC ADAPTATION TO IMPOSED DEMANDS}

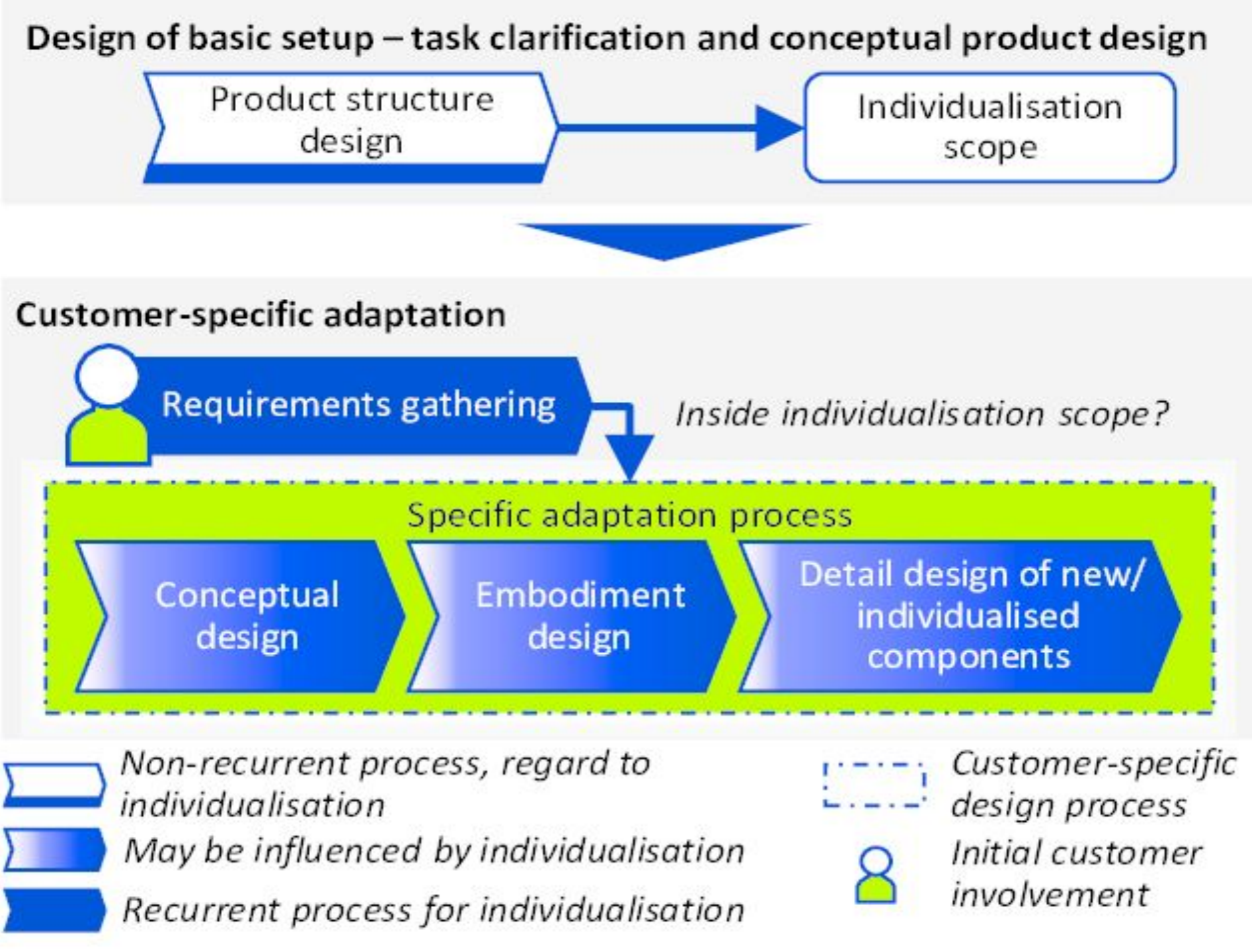
- In physical rehabilitation and sports training, the **SAID principle** asserts that the human body adapts specifically to imposed demands. It demonstrates that, given stressors on the human system, whether biomechanical or neurological, there will be a *Specific Adaptation to Imposed Demands* (SAID).

The SAID Principle

- SAID: Specific Adaptation to Imposed Demand
  - Focusing on one part of your body will improve that part but not others (bicycling)
  - Importance of cross training
  - Need to overload muscles when weight training
  - Always train before you increase intensity

Specific Adaptation to Imposed Demand

- The SAID principle (Specific Adaptation to Imposed Demand) when the body is subjected to stresses and overloads of varying intensities, it will gradually adapt over time to overcome whatever demands are placed on it
- If the STRESS is not sufficient to challenge the body, then no adaptation occurs
- If the STRESS is so great that it cannot be tolerated, injury or over training may be the result


Design of basic setup – task clarification and conceptual product design
Product structure design
Individualisation scope
Customer-specific adaptation
Requirements gathering
Inside individualisation scope?
Specific adaptation process
Conceptual design
Embodiment design
Detail design of new/ individualised components
Non-recurrent process, regard to individualisation
May be influenced by individualisation
Recurrent process for individualisation
Customer-specific design process
Initial customer involvement

CHRONIC ADAPTATIONS TO TRAINING

- Chronic adaptations are known as the SAID principle.

- ***S****pecific* ***A****daptation* ***I****mposed* ***D****emands.*

- Adaptations are specific to the demands placed on the body, or training methods & principles used.

A Shark's Specific Adaptations

What are a shark's **specific** adaptations to life as an aquatic predator?

specialized sense organs can detect the sound, movement and electrical fields of other organisms

highly sensitive sense of smell that can detect drops of blood from miles away

lots of **very sharp teeth** that are constantly replaced

silver colouring underneath acts camouflage

DIFFERENCE BETWEEN SPECIFIC AND GENERAL ADAPTIONS IN SHARKS LIFE

A Shark's General Adaptations

What are a shark's **general** adaptations to life in an aquatic environment?

streamlined shape to reduce friction when moving through water

gills have a **large surface area** so that oxygen can be extracted from the surrounding water

fins provide stability, power and control

STAGES

- Stress (stimulus)
  - Exercise / Physical Activity
- Adaptation (response)
  - Specific responsive biological adjustment to stress
    - Muscle, bone, heart, lung, vasculature, tendons, ligaments, joint cartilage, etc.
  - If stress is too great, or sufficient recovery time not allowed
    - adaptation may be inhibited
    - decrement in capacity of physiological systems
      - See overtraining

- Accommodation
  - Adaptation response will begin to slow if the exact same stimulus is continued for a prolonged period of time.
- Exhaustion
  - Adaptation is complete after limited time span
  - Continued stimulus no longer elicits adaptation

TRAINING SPECIFICITY

- Training effects are specific to the muscle groups used during training and the type of training program implemented .
- Training specifically for the movement pattern, speed, joint position, speed, and type of contraction produces improvement, specifically in those movement parameters.
  - Specific sport or activity yields greatest improvements
  - Supplement activity or sports training with resistance, cardiovascular, plyometrics, flexibility exercises
  - Utilize progression and periodization techniques

- Adaptation is specific to :Mode
  - Type of training
    - Components of fitness
    - Metabolic Pathway
    - Also see Cross Training
  - Mechanics
    - Motor Pattern
    - Mechanical forces on joints, and bones utilized
    - Muscles involved
    - Tension curve
    - Range of motion

- Intensity
  - Effort
  - Resistance
  - Speed of contraction
  - Metabolic pathways utilized
- Duration
  - Time exercising
  - Recovery between bouts or work intervals
  - Number of reps
  - Number of exercises and sets
- Frequency
  - Recovery

- **Identical-elements Theory**
- Transfer of learning between various skills and exercise routines can occur if the main elements underlying different skills or situations surrounding performance are identical and similar in nature.
  - Eg: Gymnastic training aimed at practicing complex exercise maneuvers complement (positively transfer) to the springboard diving.

Theory of Identical Elements

- This theory proposed that transfer of training occurs when what is being learned in the training session is identical to what the trainee has to perform on the job
- Transfer will be maximized that the tasks, materials, equipment are similar to those encountered in the work environment.
- Design a simulation.
- The training simulation mirrors exactly the actual situation at workplace.

SAID principle- Specific, Adaptation, Imposed, Demands

- "the particular activity we are involved in will encourage our bodies to adapt in specific ways to meet that activity's specific demands.
- **Adaptation-** long term physiological change in response to training loads that allows the body to meet new demands.

THANK YOU