

Comparison Galileo Training / FES

	Galileo WBV Training	FES Training
Stimulation Pathway	Both: <ul style="list-style-type: none"> From the muscle spindle (Afferent) Over the spinal cord to the muscle (Efferent) 	Mainly: <ul style="list-style-type: none"> (Efferent) directly to the muscles
Basic muscle function during stimulation	Reactive power: <ul style="list-style-type: none"> Muscle works with Reactive power Muscles trained with more contraction & relaxation cycles 	Real power: <ul style="list-style-type: none"> Muscle works with Real power and Muscle fatigues
Stimulation of the neuromuscular system in different ways	Frequency range of 5 to 30Hz provides different effects: <ul style="list-style-type: none"> Mobilization 5-12Hz →communication from legs to the brain Muscle Function 12-20Hz →stretch reflex carries out muscle contraction & relaxation involves spinal cord only Muscle Power 20-30Hz →relaxation cycle is cut off, continuous muscle tone is established & stretch reflex 	Bike, arm, stepper: <ul style="list-style-type: none"> Mobilization- only by the help of external devices
Repetition rate per time	High repetition in a short time & improvement of power with inter-intra muscle coordination: <ul style="list-style-type: none"> 3 minutes at 25 Hz = 4,500 contraction cycles 	Slow movement pattern & slow repetition time: <ul style="list-style-type: none"> 3 minutes cycling = 300 contraction cycles
Training of muscle power	The muscle works as a spring: Reactive power <ul style="list-style-type: none"> Energy is stored & released → low energy consumption Low forces are induced in the body → high muscle power Blood circulation isn't reduced & no extra load Little influence on the cardiovascular system 	FES bike: The muscles have to make Real power <ul style="list-style-type: none"> Only low power Higher energy consumption Cardio training
Train different body regions	Standing: Leg, pelvic & trunk muscles or, arm, shoulder, hand Hands: Finger, arms, shoulder muscles Sitting: Arm, shoulder, trunk muscles Dumbbell: Hands, arms, shoulders	Ergometer cycling: arms & shoulders / feet, legs, trunk Stepping: Feet, legs, trunk
Preparation time	Minimal: <ul style="list-style-type: none"> Set frequency Position your feet to control amplitude and start If on tilt-table: Transfer, secure straps, position feet and start training 	<ul style="list-style-type: none"> Position and placement of surface electrodes Adjustment of current for each muscle/muscle group Stimulation parameters changed when muscle function status changes Constant repurchase of electrodes if impedance between the electrode and the skin
Length of treatment	Short training period: <ul style="list-style-type: none"> 15 - 20 minutes 	Training period: <ul style="list-style-type: none"> 45 minutes - 1 hour
Applications	Variety of neuromuscular conditions: reduced mobility (force, power, balance), fitness to performance sports, recovery & relaxation, and space research	Variety of neuromuscular conditions and some diseases