How to use the Bad Ragaz Ring Method to treat function impairments of the lower extremities

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Function impairments LE (ICF)

- Mobility of joints
- Mobility of pelvis
- Stability of joints
- **Muscle power**
- Muscle tonus
- Local muscle endurance

- Gait function
- Involuntary movement reaction function
- Voluntary movement control function, e.g.
  - Supportive functions of the leg

BRRM: therapeutic concepts

- PNF
  - Patterns and techniques
- General biomechanics
- Laws of fluid mechanics
  - The body has to balance constantly
- Exercise physiology

Components of the PNF leg patterns

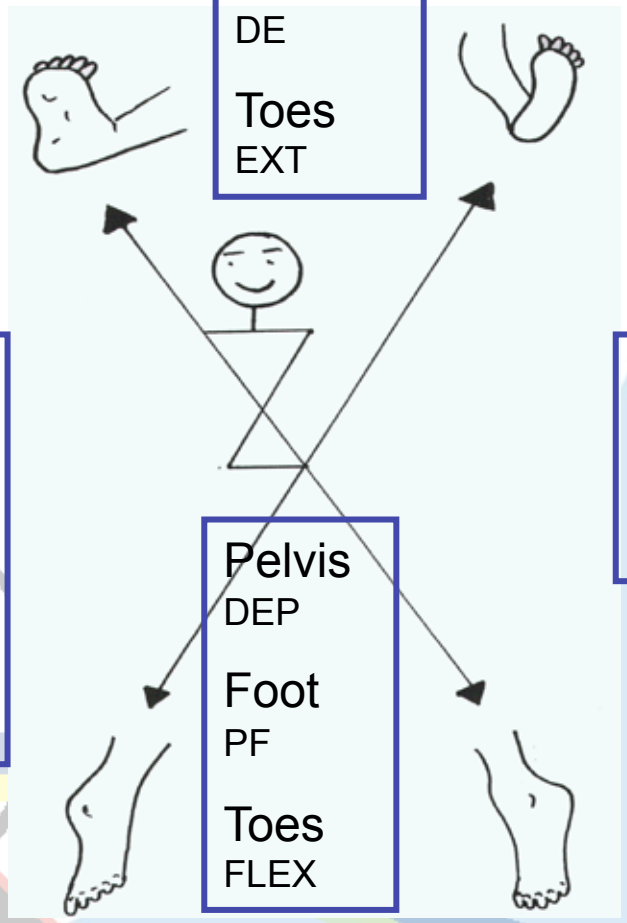
FLEX / ADD / ER

Pelvis
ELEV

Foot
DE

Toes
EXT

FLEX / ABD / IR



Pelvis ANT

Foot SUP
ADD

Pelvis POST

Foot PRON
ABD

Pelvis
DEP

Foot
PF

Toes
FLEX

EXT / ADD / ER

EXT / ABD / IR

Rules

- Lower Extremity (End positions)
  - Abduction goes with internal rotation
  - Adduction goes with external rotation
  - Flexion gives contra lateral extension in bilateral reciprocal patterns
  - Abduction in both legs together
  - Adduction in both legs together

Timing

- From distal to proximal
- In the way where the patients can follow
- Verbal, tactile, and visual in time

Stretch

- Initial stretch starts always the patterns
  - Is not possible in general in BRRM
- In BRRM is stretch used as a technique
  - repeated stretch ore repeated contractions

Techniques

- **Rhythmic initiation**
- **Combination of isotonics**
- Hold relax
- Contract relax
- **Repeated stretch/contractions**
- Timing for emphasis
- Dynamic reversal

Goals of the techniques

- To promote functional movement, using concentric, eccentric and static muscle contractions with properly graded resistance and suitable facilitatory procedures.
- To increase ROM and strengthen muscles in the newly gained ROM
- To reduce muscle fatigue when strengthening

Rhythmic initiation

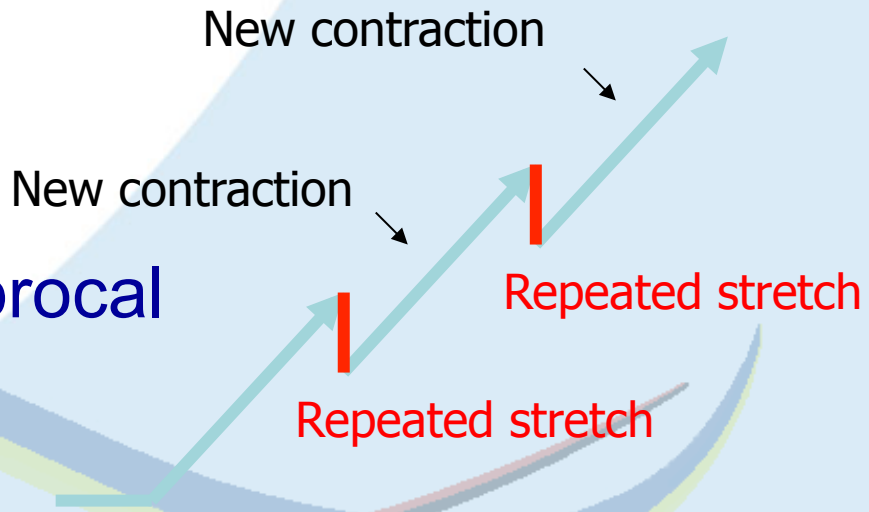
- Rhythmic motion of a limb or body through the desired range, starting with passive motion and progressing to active resisted movement.
- Goals:
  - aid in /teach the initiation in movement
  - Help the patient to adapt the muscle tone
  - Improve the sense of the movement

Combination of isotonics

- T. resists the active movement through the desired ROM *(concentric contraction)*
- T. tells patient to stay in that position *(stabilizing contraction)*
- T. asks patient to allow the part to be moved back slowly *(eccentrically)*
- No relaxation between the different types of muscle activity
- Use it in the reciprocal leg patterns
- Use it in the trunk patterns
- Use it in the arm patterns

Repeated contractions

- Repeated stretch through range
- T. resists the pattern
- T. gives shortly more resistance (stretch)
- T. asks for increased contraction
- Can be done in the reciprocal leg patterns
- Indication
  - Weak muscles



PNF compared to BRRM

PNF	BRRM
• Body is stable	• Stability of body: floation aids and Therapist
• Stretch reflex	• No stretch reflex initially
• Resistance therapist	• Resistance: hydromechanics and therapist
• Different technics	• Fewer different technics
• EOR movements	• EOR movements restricted
• Distal part moves	• Movement of both the distal and proximal parts

Principles in BRRM

- Optimal isotonic and isometric resistance
- Correct grips help to stimulate receptors and facilitate the patterns
- Push and pull stimulate nerve endings
- Short, precise commands stimulate active movements
- Facilitation provides irradiation to the weak muscles
- Distal holds increase difficulty to execute correct patterns
- The therapist feels the quality of movement and can adapt by changing resistance

Strengthening with BRRM?

	Fully inflated rings	Partially inflated rings	Maximal dry R.
Unilat shoulder Fl / abd / ex rot	66 %	91 %	12 kg
Unilat shoulder Fl / add / int rot	73 %	95 %	14 kg
Bilat shoulder Ext / elbow flex	46 %	57 %	50 kg
Unilat hip abd	84 %	96 %	18 kg
Unilat hip add	85 %	93 %	18 kg
Unilat. hip /knee ext	52 %	59 %	60 kg

Harrison RA: Physiotherapy 1982

Patterns

- Legs: bilateral symmetrical

- Legs: bilateral asymmetric reciprocal

- Legs: straight asymmetric reciprocal (bilateral)

Treatments

- **Leg Patterns:** bilateral asymmetric reciprocal

- Isometric leg as counter thrust
- Painful leg isometric leg
- optimal strengthening leg and trunk
- Trunk stabilisation
- Mobilisation isometric hip in extension
- Mobilisation isotonic hip in flexion
- Use Rotation for mobilisation

Lower extremity
bilateral asymmetrical reciprocal

- Flex-Abd-IR
  - with knee flexion (isotonic)
- Ext-Abd-IR
  - with knee extension (isometric)

Lower extremity
bilateral asymmetrical reciprocal

- Flex-Add-ER
  - with knee flexion (isotonic)
- Ext-Add-ER
  - with knee extension (isometric)

Lower extremity
bilateral asymmetrical reciprocal

- Ext-Add-ER
  - with knee flexion (isotonic)
- Flex-Add-ER
  - with knee extension (isometric)

Lower extremity
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