RESISTANCE TRAINING FOR ROWING

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UNITED STATES OLYMPIC COMMITTEE

Summary of presentation

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MUSCLE REQUIREMENTS ARE ANALYZED BY BREAKING THE STROKE UP INTO THE FOLLOWING SEQUENCES:

1) THE CATCH
2) DRIVE-LEGS EMPHASIZED
3) DRIVE-BODY SWING EMPHASIZING THE BACK
4) DRIVE-ARM PULL THROUGH
5) THE FINISH
6) THE RECOVERY
BASIC PRINCIPLES OF RESISTANCE TRAINING

1. INTENSITY - PERCENT OF MAXIMUM
2. VOLUME OF TRAINING
3. VARIATION OF TRAINING
4. PROGRESSIVE RESISTANCE EXERCISE
5. REST PERIODS
6. SPEED SPECIFICITY
7. CONTRACTION SPECIFICITY
8. MUSCLE GROUP SPECIFICITY
9. ENERGY SOURCE SPECIFICITY
SAFETY ASPECTS OF LIFTING

* SPOTTING
* BREATHING
* PROPER FORM
* FULL RANGE OF MOTION
* WARM-UP
TYPES OF STRENGTH TRAINING

* ISOMETRICS
* DYNAMIC CONSTANT RESISTANCE
* DYNAMIC VARIABLE RESISTANCE
* ECCENTRIC TRAINING
* ISOKINETICS
NEEDS ANALYSIS

* EXERCISE MOVEMENTS
  - SPECIFIC MUSCLES
  - JOINT ANGLES
  - CONTRACTION MODE
  - LOADING NEEDS

* METABOLISM USED % FROM:
  - ATP/PC
  - LACTIC ACID
  - OXYGEN UPTAKE

* INJURY PREVENTION
  - MOST COMMON SITES OF INJURIES
  - SITES OF PREVIOUS INJURIES
ACUTE PROGRAM VARIABLES

* CHOICE OF EXERCISE
  - STRUCTURAL
  - BODY PART
  - CONTRACTION MODE

* ORDER OF EXERCISE
  - LARGE MUSCLES FIRST
  - SMALL MUSCLES NEXT
  - ARM TO LEG, ARM - ARM - LEG - LEG

* NUMBER OF SETS

* REST PERIODS
  - SHORT
  - MODERATE
  - LONG

* FOOD
  - STRENGTH/ENDURANCE CONTINUUM
ADMINISTRATIVE CONCERNS

* AVAILABILITY OF EQUIPMENT

* NUMBER OF INDIVIDUALS IN TRAINING

* AVAILABILITY OF SPACE

* AVAILABILITY OF TIME

* QUALIFICATION/CERTIFICATION OF LEADER
ADAPTATIONS TO RESISTANCE TRAINING

* MUSCULAR HYPERTROPHY
* BODY COMPOSITIONAL CHANGES
* NEURAL FACTORS
  - REDUCED INHIBITION
  - FORCE VELOCITY CURVE
* OXYGEN CONSUMPTION
* FUEL AVAILABILITY TO ENERGY SOURCES
<table>
<thead>
<tr>
<th>WOMEN AND RESISTANCE TRAINING</th>
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<tr>
<td>GENDER DIFFERENCES IN STRENGTH</td>
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<td>TRAINING EFFECTS</td>
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<td>MISCONCEPTIONS ABOUT WOMEN AND RESISTANCE TRAINING</td>
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<td>MENSTRUAL CYCLE IRREGULARITIES</td>
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<td>- OLIGOMENORRHEA</td>
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<td>- SECONDARY AMENORRHEA</td>
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<td>- DYSMENORRHEA</td>
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<td>- RELATIONSHIP TO PERFORMANCE</td>
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* ENZYMATIC CHANGES
* HORMONAL RESPONSES
* CARDIOVASCULAR ADAPTATION
* MUSCLE CONTRACTION TIME
* CONNECTIVE TISSUE
* BONE DENSITY
* PREVENTION OF INJURIES
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<th>PERIODIZATION</th>
<th>GENERAL CONDITIONING</th>
<th>HYPERTROPHY</th>
<th>BASIC STRENGTH</th>
<th>MUSCULAR ENDURANCE</th>
<th>COMPETITION MAINTENANCE</th>
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Resistance Training for Rowing

**Primary**
- Bench rows
- Bent-over rows
- Cleans
- Back extensions
- Squats
- Leg press
- Snatch (advanced)

**Secondary**
- Pull-ups
- Upright rowing
- Lateral pull-downs
- Horizontal pull-ups
- Straight legged dead lift
- Good morning
- Leg extensions
- Leg curls
- Lunges
SUPPLEMENTAL ROWING EXERCISES

SIT-UPS (VARIETY OF TECHNIQUES)
BENCH PRESS
OVERHEAD PRESS
CURLS
REVERSE CURLS
DELTOID RAISES
WRIST CURLS
SHOULDER SHRUGS
CALF RAISES
<table>
<thead>
<tr>
<th>PHASE</th>
<th>INTENSITY</th>
<th>SETS</th>
<th>REPS</th>
<th>FREQ.</th>
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<tbody>
<tr>
<td>GENL. CONDITION</td>
<td>&lt; 50% IRM BODY WEIGHT</td>
<td>2 - 3</td>
<td>15 - 30</td>
<td>2 - 3X/WK</td>
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<tr>
<td>HYPERTROPHY</td>
<td>60-70% IRM</td>
<td>3 - 5</td>
<td>8 - 15</td>
<td>2 - 3X/WK</td>
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<tr>
<td>BASIC STRENGTH</td>
<td>&gt; 80% IRM (momentary muscular failure)</td>
<td>5</td>
<td>3 - 8</td>
<td>3 - 4X/WK</td>
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<td>MUSCULAR END.</td>
<td>40-60% IRM</td>
<td>2 - 3</td>
<td>15 - 40</td>
<td>2 - 3X/WK</td>
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<td>COMPETITION MAINT.</td>
<td>70-90% IRM</td>
<td>2</td>
<td>5 - 15</td>
<td>2X/WK</td>
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References

