



LATIHAN BEBANAN

NURINDRI RAHAYU

SEJARAH



- Latihan beban bermula pada zaman Greek oleh Milo yang memikul seekor anak lembu ke stadium Olympia.
- Tahun 1728 John Paugh menulis buku “A Physiological Teoritical and Practical Treatise on the Utility of Muscular Exercise for Restoring the Power to the Limbs.
- Pada tahun 1940, askar-askar menggunakan latihan bebanan untuk peperangan.
- Pada tahun 1950an, syarikat Universal Equipment telah menghasilkan system latihan bebanan.



DEFINISI

Latihan bebanan merupakan suatu kaedah yang memusatkan penggunaan bebanan bagi tujuan Meningkatkan komponen-komponen kecergasan terutama sekali dari segi kekuatan, kuasa, dan daya tahan otot.

Objek Latihan Bebanan

- Meningkatkan kekuatan otot
- Meningkatkan tahap kelenturan dan kepantasan
- Meningkatkan kuasa eksplosif
- Meningkatkan daya tahan otot
- Untuk pemulihan daripada kecederaan
- Meningkatkan daya tahan kardiovaskular

JENIS – JENIS LATIHAN

Latihan
isometrik

Latihan
isotonik

Latihan
isokinetik



Prinsip Latihan Bebanan

- Overload
- Latihan urutan (arrangement of exercise)
- Pengkhususan latihan
- Kekkerapan latihan (bilangan hari dan set)
- Ansur maju (progression)

Sistem Latihan Bebanan

- System set
- Super set
- Triset
- Giant set
- Split system training
- Latihan litar
- Pyramid
- Decending set



PROGRAM LATIHAN BEBANAN UNTUK LAWAN PEDANG

SUMBER: Robert Price (2003), The Ultimate Guide to Weight Training for Fencing, Sport & Recreation

Priority given Example of General Training Priorities by Sport Seasons

to :

Sport Seasons	Sport Practice	Resistance Training	Resistance Training Goal
Off Seasons	Low	High	Hypertrophy and muscular endurance (initiality), strength and power later.
Pre Seasons	Medium	Medium	Sport and movement specific, (strength, power, or muscular endurance, depends on sport)
In Seasons	High	Low	Maintenance of pre season main goal.
Post Seasons (active rest)	variable	Variable	Not specific (may include activities other than sport skill or resistance training)

Bentuk Latihan	Fasa Latihan				
	General preparation	Specific preparation	Pre competition	Competition	
	Anatomi adapt	Power	Speed and endurance	Maintanance	
	Strength	12 – 15 reps	20 – 25 reps	20 – 25 reps	
	8– 12 reps	3 set	3 set	3 set	
	3 set	50 - 60 %	30 – 50 %	30 – 50 %	
	80 – 100 %	4-5 min	1-2 min	1-2 min	
3-5 min					
Two Arms Curl (Bisep)					
Heels Raise (gastrocne mius and soleus)					
High pull (deltoid)					
Sit up					



KEKERAPAN LATIHAN

SUMBER: ROBERT PRICE (2003), THE ULTIMATE GUIDE TO WEIGHT TRAINING FOR FENCING, SPORT & RECREATION

Resistance Training Frequency Based on Training Status

Training Status	Frequency guidelines (sessions/week)
Beginner	2 – 3
Intermediate	3 – 4
Advanced	4 – 7

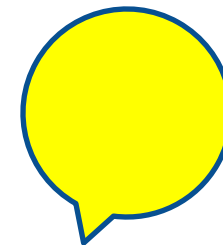
Resistance Training Frequency Based on the Sport Seasons (For a Trained Athlete)

Sport Seasons	Frequency guidelines (sessions/week)
Off Seasons	4 – 6
Pre Seasons	3 – 4
In Seasons	1 – 2
Post Seasons (active rest)	1 – 3

Intensity Value	Intensity	Percent of 1 RM	Type Of Contraction
1	Super maximum	>105	Eccentric/iso metric
2	Maximum	90 – 100	Concentric
3	Sub- maksimum	80 – 90	Concentric
4	intermediate	70 – 80	Concentric
5	Intermediate	60 – 70	Concentric
6	Rendah	30 – 50	Concentric

Sumber : Bompa, T. O (1983) Theory and Methodology of Training, IOWA: Kendall Hunt Pulic Company.

INTENSITY VALUES AND LOAD USED IN STRENGTH TRAINING



BEBANAN LATIHAN

- Bebanan dasar : berat bebanan awal yang boleh diangkat oleh atlet, ianya bergantung kepada kemampuan atlet.
- Bebanan sasaran : massa yang ingin dicapai melalui latihan bebanan. Kekuatan maksimum 80 – 100%, hypertrophy 60 – 80%, kuasa 50 – 60%, dayatahan otot 30 – 50%.



Sumber : Bompa, Tudor O, periodization : theory and methodologi of training, 1994.

Load Percent	Speed of Performance	Rest Interval (minute)	Applicability
>105 (eccentric)	Slow to medium	4 – 5	improve maximum strength and muscle tone.
80 – 100	Slow to medium	3 – 5	improve maximum strength and muscle tone
60 – 80	Slow to medium	2	improve muscle hypertrophy
50 – 60	Slow to medium	4 – 5	improve power
30 – 50	Slow to medium	1 – 2	improve M – E

Rest Interval Between Sets



SISTEM TENAGA

- Sistem ATP-PCR, disebut juga sistem posphagen.
- Sistem lactic acid, membantu menambah kecepatan ATP
- Proses glikolisis, adalah proses perubahan glycogen menjadi glukosa.
- Terdapat dua proses glikolisis, yaitu aerobik dan anaerobik glikolisis.
- Sistem aerobik atau sistem oksigen, berguna untuk menghasilkan ATP yang banyak.



MENGAWAL TEKANAN

Cara mengawal stress masa bertanding

- Deep breathing
- Muscle Relaxtion
- Mindfulness

Bagaimana mengawal tekanan ?

- Perlakukan tubuh dengan baik dan benar
- Belajar dan berlatih tehnik untuk relaksasi
- Lakukanlah aktiviti lain selain sukan yang dilakukan
- Don't try to be a perfect
- Enjoy the game



SUPPLEMENT

Essential Nutrient

- *Carbohydrates (60%)*
- *Protein (0.36gr / paun BB)*
Otot, tulang, hormon, kulit, enzim
- *Fat (30%)*
improve sel, penyerapan Vitamin.
- *Vitamin*
- *Mineral*
- *Air*

Ergogenic aids

- *Anabolic Steroid*
- *Human growth hormone*
- *Creatine*
- *Fat burners*



KADAR NADI LATIHAN

- $H_{rmax} = 220 - \text{umur}$
- Kajian tahun 2002 :
 - $HR_{max} = 205.8 - (0.685 \times \text{age})$
 - $H_{rmax} = 206.3 - (0.711 \times \text{age})$ “Londeree and Moeschberger from University Missouri – Columbia”
 - $H_{rmax} = 217 - (0.85 \times \text{age})$ “Miller et al. From Indiana University”
- The Karvonen method factors in Resting Heart Rate (HR_{rest}) to calculate Target Heart Rate :
 - $THR = ((HR_{max} - HR_{rest}) \times \%Intensity) + HR_{rest}$
- Example for someone with a HR_{max} of 180 and a HR_{rest} of 70:
 - 50% intensity: $((180 - 70) \times 0.50) + 70 = 125 \text{ bpm}$
 - 85% intensity: $((180 - 70) \times 0.85) + 70 = 163 \text{ bpm}$



MINUMAN BERKARBONAT

- Phosphoric acid, menyebabkan tubuh tidak seimbang
- Kafein, akan menyerang keadaan fizikal.
- Aspartic acid adalah Excotoxin yang menyebabkan penyakit neurological kronis.
- Saccharin, pemanis buatan yang merupakan carcinogen (penyebab kanser).
- Caramel coloring, berkesan negative terhadap genetik dan penyebab kanser.
- Glukosa, menyebabkan pembuangan kalsium, magnesium, dan zat mineral lain.



INJURY PREVENTION TIPS

- Avoid training when you are tired
- Increase your consumption of carbohydrate during periods of heavy training
- Increase in training should be matched with increases in resting
- Any increase in training load should be preceded by an increase in strengthening
- Treat even seemingly minor injuries very carefully to prevent them becoming a big problem
- If you experience pain when training STOP your training session immediately
- Never train hard if you are stiff from the previous effort



OVER TRAINING (LATIHAN MELAMPAU)

- Sindrom overtraining
- Autonomic nervous system overtraining
- Rangsangan hormonal pada overtraining
- Immunity dan overtraining
- Predicting overtraining syndrome
- Treating overtraining syndrome



PEMAKANAN

Energy Requirement (EER) :

- **Males, 19 years and older :**
- $662 - 9.53 \times \text{age} + \{\text{PA} (15.91 \times \text{weight} + 539.6 \times \text{Height})\}$
- **Females, 19 years and older :**
- $354 - 6.91 \times \text{age} + \{\text{PA} (9.361 \times \text{weight} + 726 \times \text{Height})\}$
- PA : Coefficient physical activity
- Weight : Berat badan dalam kg
- Height : tinggi badan dalam meter



THE PHYSICAL ACTIVITY LEVEL CATEGORIES

Category	Physical Activity Level (PAL)	Physical Activity Coefficient (PA) Males/Females
Sedentary	$\geq 1.0 - < 1.4$	1.00/1.00
Low active	$\geq 1.4 - < 1.6$	1.11/1.12
Active	$\geq 1.6 - < 1.9$	1.25/1.27
Very active	$\geq 1.9 - < 2.5$	1.48/1.45



SERVING SIZES FOR THE FOOD GUIDE PYRAMID AND THE FOOD EXCHANGE SYSTEM

Pyramid food group	Serving size	Food exchange	Serving size
Milk, yogurt, and cheese	1 cup of milk or yogurt. 1 ½ ounces natural cheese. 2 ounces of processed cheese.	Milk list	1 cup of milk or yogurt
Meat, poultry, fish, dry beans, eggs, and nuts	2-3 ounces of cooked lean meat, poultry, or fish. ½ cup of cooked dry beans. 1 egg 2 tablespoon peanut butter.	Meat and meat substitutes list	1 ounces meat, poultry, or fish. ½ cup dried beans 1 ounce cheese 1 egg
Bread, cereal, rice, and pasta	1 slice of bread. 1 ounce of ready-to-eat cereal. ½ cup of cooked cereal, rice, or pasta.	Starch list	1 ounce of bread ½ cup of cereal, grain, pasta.
Vegetable	1 cup of raw, leafy vegetable. ½ cup of other vegetables, cooked or chopped raw.	Vegetable list	1 cup of vegetable raw. ½ cup of vegetable or vegetable juices

