

STRENGTH TRAINING AND HANDBALL PLAYERS

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HANDBALL

- Contact sport
- High intensity, short duration
- Fundamental skill is throwing
- Successful performance depends on **explosive** muscular contractions as : jumping, sprints, acceleration, changing directions
- No early specialization, but multilateral development (peak at 25)



Major determinants of success are :

Maximal
Strength

Throwing velocity

Power

To optimize effectiveness of training programme, where we need **power** and **strength**, we also need to improve **technical** and **tactical skills (near the in season)**

WHICH EXERCISES ARE SUITABLE FROM STRENGTH TRAINING TO HANDBALL TRAINING PROGRAM?

- Resistance and strength training involves wide range of resistance loads and different modalities as:
 - Throw with ball or medicine ball
 - Olympic weightlifting
 - Elastic band training
 - Plyometric training
- All this are aimed at developing maximal strength and power

Chest and Triceps workouts

- Flat Bench (BB or DB), Incline Bench (BB or DB), Weighted Dips, Diamond Push-ups, Weighted Push-ups, Triceps Cable Extensions, Chest Flys,

Shoulders and Back Workouts

- Weighted Pull-ups, Weighted Chin-ups, DB Military Press, Shoulder Raises, Lat Pull Downs, Lower Back Pull Downs, Shrugs (BB or DB), Reverse Flys, Weighted Shoulder Circles

Core Workouts

- Weighted Decline Sit-ups, Russian Twists, Flutter Kicks, Leg raises (off pull-up bar), planks, medicine ball throws, oblique lifts, supermans, weighted glute-ham raises

Speed Work Ideas

- Hill sprints, ladder work, plyometrics, box jumps, sprinting intervals, backpedal sprints and strides

Leg Strength Workouts

- Weighted Lunges (walking, 1 foot on bench, standing), pistol squats, slow count squats, leg press, 1-leg and both leg jumps and box jumps

TRAINING PROGRAM

The best approach to design strength training program for handball players consists from at first:

- Collecting informations about their injury history (individually)
- Strengths and weaks of the group
- Plan program to improve strength, power and lower incidence of injuries



THROWING BALL VELOCITY

- After practising **resistance training** and **plyometric training** handball players achieve higher throwing ball velocities of all types: standing throw, 3step running throw, jump throw
- Increasing loads, higher throwing weights with small number of reps – less time is required to obtain optimal response
- Studies are more concerned on concentric exercises, but in lot of actions there is important also eccentric part and their combination
- Throwing medicine ball 1kg/3kg,

MAXIMAL STRENGTH

- Deadlift, lunges, squat pull over, bench press, barbell squat...
- These exercises despite of explosive contraction are performed in **slow velocity** and have **greatest effect on strength improvement**
- Best for maximising strength are **longer contraction** duration exercises with heavier loads
- Smaller number of sets and reps, but heavier 1RM

MUSCLE POWER

- Resistance training using dynamic eccentric- concentric exercises on peak muscle power for upper and lower limbs leads to improvement of relative and absolute power
- Plyometry
- Squat jumps, box jumps, clean and jerk, dynamic bench press, jumping lunges
- Exercises in 80-90% 1RM

SPECIFIC SKILLS

- Dribbling
- Catching
- Throwing
- Jumping
- Accuracy
- Saving



AEROBIC/ANAERBIC

- **Aerobic training**
 - Is important, because well developed aerobic training allows to tolerate high intensities and physiological load training
- **Anaerobic training**
 - Is important, because it improves performance of intense match activities such as sprints, jumps, shots

INJURIES

- **Ankle** – sprains (more woman)
- **Knee** - ACL anterior crucial ligament (healing long time- most serious), meniscus
- **Shoulder , elbow, fingers**
- **Head**



PREVENTION OF INJURIES

- Proper warm up
- Exercises for stabilisation of joints
- Balance exercises focusing on neuromuscular control and landing
- Compensation exercises
- Orthosis
- Taping
- Healthy lifestyle (food, supplements, relax)

HOW MUCH
TRAINING
SESSIONS ARE
SUITABLE TO
SUSTAIN STRENGTH
AND POWER?

- 1 x a week – too little
- 2 x a week – good stimulus, but sometimes not enough for improvement
- 3 x a week - improvement

WARM UP

- 10minutes
- Jogging, high knees, running
- Calistenics (burpees, jump squats, rope skipping...)
- Dynamic stretching (hand to toe touch, hamstring, quadriceps, trapezius stretches...)
- Mobility exercises (joint rotations)

EARLY PRESEASON

- Players are preparing for the season and building up after the offseason, adaptation
- Training is built on building aerobic fitness, functional strength, and hypertrophy
- More general exercises, high volume (sets and repetitions)
- **5sets, 10 reps at 1RM 60-70% 4 exercises, 3 min rest**
- Push (benchpress, pushups, dips, leg press)
- Pull (pull ups, deadlift, lat pulldowns, curls, chin ups)
- Strength (various types of squats and lunges, hip thrusts, clean and jerk)

LATE PRESEASON

- Building anaerobic fitness and maximum strength and power- includes sprints and all-out effort training to build cardiovascular capacity and top-end effort for quick bursts of energy
- Building maximum strength and power includes quick movements under load. Some examples include lifting heavy weights and using [plyometric](#)
- Focusing more on specific skills
- Less volume, faster
- **3 sets 5 reps 80-85% of 1RM 4 exercises, 3 min rest**
- Push
- Pull
- Medicine ball – unilateral, bilateral, slams to the ground, overhead
- Plyometrics- box jump, single leg hop, split squat jump

STRENGTH TRAINING IN LATE PRESEASON

a) week 1

- Bench Press, Push ups, Dips
- 4 sets of 6 reps at 75% of 1RM or 5 sets of 4 reps at 85% of 1RM
- Medicine ball
- Chest and Triceps

b) week 2

- Back Squat, Goblet squat, Loaded plank
- 4 sets of 6 reps at 75% of 1RM or 5 sets of 4 reps at 85% of 1RM
- Plyometric training
- Core and Speed Work

c) week 3

- Shoulder Press, Latisimus dorsi pulldown, Chinn ups
- 4 sets of 6 reps at 75% of 1RM or 5 sets of 4 reps at 85% of 1RM
- Medicine ball
- Shoulders and Back

d) week 4

- Power Clean, Hanging leg circles, Lateral wood chop
- 6 sets of 3 reps at 80% of 1RM or 5 sets of 2 reps at 90% of 1RM
- Plyometric training
- Core and Speed Work

e) week 5

- Front Squat, Reverse lounges, Deadlift
- 4 sets of 6 reps at 75% of 1RM or 5 sets of 4 reps at 85% of 1RM
- Leg Strength Work

IN SEASON

- Players are expected to be fully functional for competition. Training involves maintaining speed, aerobic and anaerobic fitness, and emphasizing strength and power
- During this time, competition takes precedence over other training, so gym sessions are decreased but are still important. A blend of speed training with sprints and strength training are performed

Exercises	Session 1	Session 2	Session 3	Session 4	Session 5	Session 6
Clean and Jerk	55: 3 × 6	55: 3 × 8	60: 3 × 6	60: 3 × 8	60: 4 × 6	60: 4 × 6
Bench press	55: 3 × 6	55: 3 × 8	60: 3 × 6	60: 3 × 8	60: 4 × 6	60: 4 × 6
Snatches	55: 3 × 8	55: 3 × 10	60: 3 × 8	60: 3 × 10	60: 4 × 8	60: 4 × 6
Pull-over	55: 3 × 8	55: 3 × 10	60: 3 × 8	60: 3 × 10	60: 4 × 8	60: 3 × 6
Exercises	Session 7	Session 8	Session 9	Session 10	Session 11	Session 12
Clean and Jerk	65: 3 × 6	65: 4 × 6	70: 3 × 5	70: 4 × 5	75: 3 × 5	70: 3 × 6
Bench press	65: 3 × 6	65: 4 × 6	70: 3 × 5	70: 4 × 5	75: 3 × 5	60: 4 × 6
Snatches	65: 3 × 8	65: 4 × 8	70: 3 × 5	70: 4 × 6	75: 3 × 6	60: 4 × 6
Pull-over	65: 3 × 8	65: 4 × 8	70: 3 × 6	70: 4 × 6	75: 3 × 6	70: 2 × 6
Exercises	Session 13	Session 14	Session 15	Session 16		
Clean and Jerk	75: 4 × 4	80: 3 × 3	80: 3 × 4	85: 3 × 3		
Bench press	75: 4 × 4	80: 3 × 3	80: 3 × 4	85: 3 × 3		
Snatches	75: 4 × 5	80: 3 × 3	80: 4 × 3	85: 4 × 3		
Pull-over	75: 3 × 5	80: 3 × 3	80: 4 × 3	85: 4 × 3		

OFF SEASON

- When the season is over, it is time to relax for a while, but handballers still need to remain active
- Rest and recovery with the maintenance of light activity—heal [cross-training](#), light gym work, core training, circuit training injuries
- Muscle compensations, visit physiotherapist and work on instabilities and heal injuries

CONCLUSION

- Weightlifting exercise offer a stimulus that should be included in any resistance-training program for healthy handball players, who require quick, powerful movements
- Biweekly in-season weight training **improved** the **muscle volume, maximal strength of the upper limbs, and ball throwing velocity** in healthy handball players relative to their standard training program

THANK YOU FOR YOUR ATTENTION

REFERENCES

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