Delta Kratos

Injury Prevention/ Athletic Performance Enhancement:

A New Paradigm for Ice Hockey

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Outline
(Who, What, Where, When, How Much?)

- Introductions
- Mission Statement/Objectives
- Ice Hockey Injury Overview

Introductions (Who)

- Dan Boothby MS, CSCS –Owner of Dan Boothby Strength and Conditioning, Head Strength Coach of a Division 1 Men's Ice Hockey Team, and Co-Founder of Delta Kratos

- Paul K. Canavan PhD, ATC, CSCS, PT, DPT (Physical Therapist, Athletic Trainer, Strength Specialist) Co-Founder Delta Kratos. 20 years + of experience working with athletes of all levels of ice hockey players and specializing in assessment, injury prevention and sport performance enhancement

What

1) Individualized Assessment to identify strengths and areas of concern

2) Individualized Program Development

3) Reassessment (Outcomes) and Modifications and Enhancements

The Screening Developed by ***Delta Kratos*** is Experience and Evidenced Based

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Mission Statement/Main Objectives

To Provide a Multi-disciplinary, Evidence and Experienced based approach to achieve real reductions in the Incidence & Prevalence of Athletic Injuries as well as Improve Athletic Performance

To be the Premier Company in the U.S.A. to provide Individualized Assessment, Intervention, Re-Assessment, and Outcome Measurement for Athletes

Statement of the Problem

- The incidence of Injuries in Ice Hockey is very high. The occurrence of injury in ice hockey players can have a negative effect .....

1) Fiscally: Co-pays on Health Care, etc.

2) Time: Rehabilitation, M.D. visits, etc.

3) Sport Performance

4) Scholarship Potential

Injury Risk Factors: Intrinsic & Extrinsic

- Intrinsic

Prior Injury (Inadequate or No Rehab)

Strength

Flexibility

Ligament Laxity

Psycho-Social (Anxiety/Stress)

(Inklaar, 1994; Greene, 2001; Emery, 2003)

Extrinsic

Playing Field

Shoes

Coaching (Education)

Strength & Conditioning

"Prevention" Program

Refereeing

Assessment: (*What* we can do)

- Functional Screening
- Determining the Weak Link(s) and Identifying Risk potential Factor(s) related to Future Injury and possibly decrement in Athletic Performance

NCAA Men's Ice Hockey: Overall Analysis of Injuries

- 8 Division 1 teams in one Athletic Conference (1 season)
- 113 Injuries in 23,096 exposures
- 65% occurred during games
- (4.9 injuries per 1,000 athlete exposures)
- Collisions vs opponent or the boards acco
  injuries
- Most Common Type of Injuries:
  Include Knee and Ankle Injury

(Flik et al., Amer J Sports Med, 2005)

Need for Assessment

- Altered Biomechanics in the Hips due to strength or flexibility asymmetry can have the potential of increasing Lower Extremity Pain/Injury

- Having optimal flexibility, strength, and power is needed to withstand the stresses and strains placed on each ice hockey player

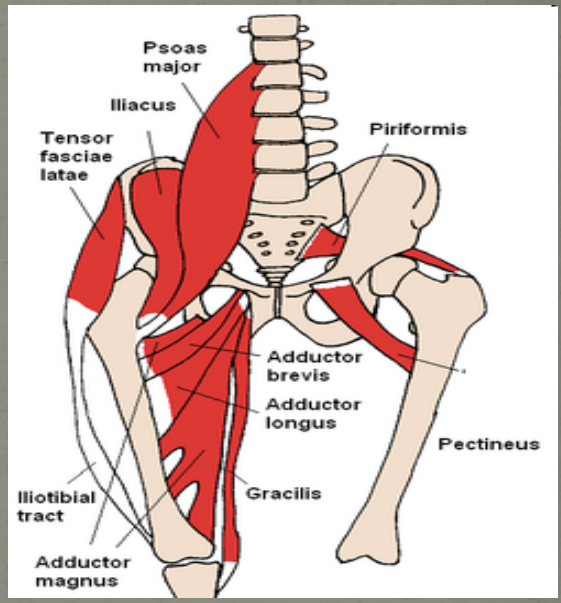
Need for Objective Strength Testing

- All Adductor strains occurred during NHL Ice Hockey games. Players that sustained a adductor strain, the side that was injured had the lower adductor/abductor strength ratio

(Tyler et al., Am J Sports Med, 2001)

Common Diagnoses: *Chronic Pain*

- Lower Abdominal Injuries; “Sports Hernia” “Hockey Hernia”
- Athletic Pubalgia
- Bursitis
- Snapping Hip Syndrome
- Stress Syndrome
- Osteitis Pubis
- Acetabular Labral tear & loose bodies



Common "Prevention" Strategies

- Traditionally, conditioning and preventative programs have targeted and emphasized Team based Strengthening Exercises due to time and personnel constraints
- Power, Endurance, Flexibility and many other factors need to be addressed
- Need for Individualized Screening in order to Optimize the Interventions based upon strengths and weaknesses and Goals

Screening & Intervention

- *Screening* (Interdisciplinary Team Approach; Certified Athletic Trainers, Strength and Conditioning Specialist, Physical Therapist/Athletic Trainer/Researcher.)
  - L.E. Power (Double Leg Broad Jump, Single Leg Broad Jump)
  - Flexibility (Hip and Upper & Lower Extremity)
  - Strength (Trunk & Hip Strength)
  - Other factors, Physiological and Biomechanical

Importance, Need and Utility for a Multi-Disciplinary Approach

- Multi-disciplinary approach is needed (M.D., A.T.,C., P.T., C.S.C.S., Coach and Athlete)
- Team vs. Individualized Screening approach
- Importance of a structured Prevention and Rehabilitation program to prevent injury, following injury and or/surgery with proper communication, interdisciplinary and comprehensive approach

Multi-Factorial Injury Prevention Program

- Multi-factorial injury prevention program can reduce injury rates

(Parkkari, Kujala, Kannus Sports Med, 2001)

Prevention of Ice Hockey Injuries and Increasing Sport Performance

1) Screening
2) Anatomy & Biomechanics
3) Physiological & Psychological
4) Interdisciplinary Interaction
5) Intervention
6) Communication, Comfort, Confidence, ***Compliance WITH THE PRESCRIBED PROGRAM*** (Canavan, 1998)
7) **Continued Modification and Improvements**

Expectations

- Improved Strength and Flexibility and Power
- Improved Athletic Performance
- Improved Self Confidence

- Decreased Injury Rate
- Decreased Insurance Claims
- Decreased Injury Anxiety

Benefits to the Individual Hockey Player?

1) Improved Marketability

- Athlete/Team Assessment
- Development of Individualized S & C programs
- Injury Prevention (ACL)
- Outcome Measurements (Longitudinal)
- Parents and Youth
- Seminars
- Accountability (Tracking Progress)

2) Potential Fiscal Gain (Scholarships, Improved Performance for professional level means increased Salary Revenue, Decreased Medical Costs, etc…)

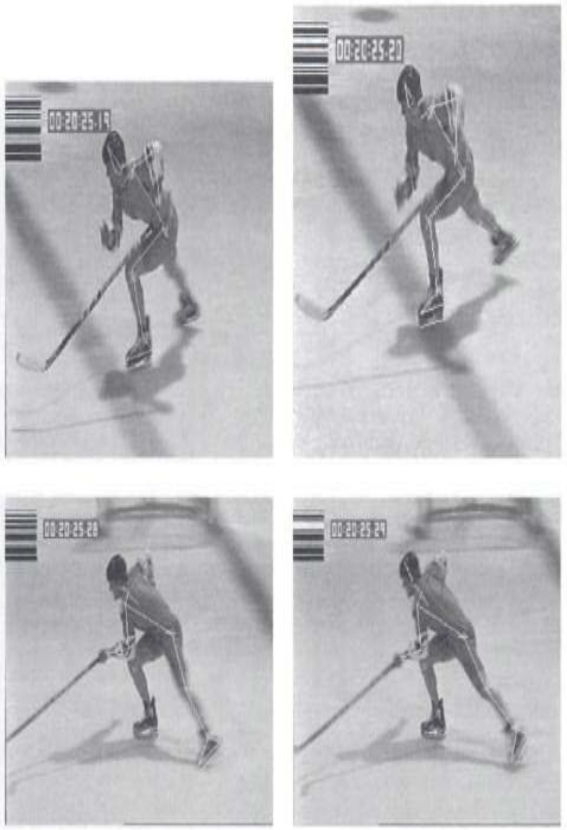


FIGURE 11.1

A. End of left-foot recovery, end of right-foot push-off. *B.* Start of left-foot push-off, start of right-foot recovery. *C.* End of right-foot recovery, end of left-foot push-off. *D.* Start of right-foot push-off, start of left-foot recovery.

the recovery phase, the hip and knee flex, the hip rotates internally to neutral, and the ankle is maximally dorsiflexed.[12]

Combined Leg Action

When examining the combined action of the legs, there are alternating periods of single support (one-skate in contact with the ice) and double support (both skates in contact with the ice).[12] The single-support period is often a glide phase, whereas propulsion or push-off occurs during the double-support period.[16] During acceleration, propulsion can occur during both double- and single-support periods. Often, after the first three strides, there may be no double-support phase.

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