
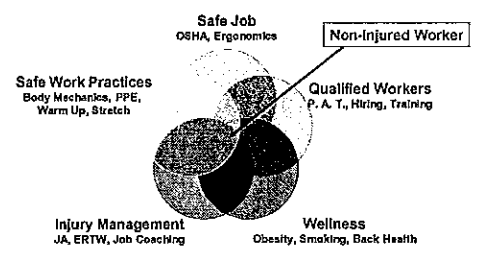


## Is Your Stretch & Flex Program Cutting Edge?



Deborah Read, MOTR/L  
aka ErgoGirl!  
ErgoFit Consulting, Inc.

## Piece of Puzzle



Safe Job  
OSHA, Ergonomics

Non-Injured Worker

Safe Work Practices  
Body Mechanics, PPE,  
Warm Up, Stretch

Qualified Workers  
P, A, T., Hiring, Training

Injury Management  
JA, ERTW, Job Coaching

Wellness  
Obesity, Smoking, Back Health

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## Pre-Activity Stretch



Research

## 2004 Lit Reviews

- No significant injury reduction
- Up to 2 hours....
- Increased BP
- Reduced strength
- Reduced running economy
  - endurance + speed

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- Reduced jump performance
- Reduced balance
- Reduced reaction time
- Extremes of inflexibility and hyper flexibility increase risk of injury.
  - Med & Sc Spor & Ex 2004; 36(3):371-378
  - Clin J of Spor Med 2004 Sep; 14(5):267-73

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## Bottom Line

- No Static Stretching prior to activity!
  - ACSM official position since 2004
- Dynamic ok
- At best = neutral effect
- At worst = negative effect
- Much research to back this up!!


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### No Effect

- 1,538 male army recruits. Randomized.
- 12 week study. Both groups 5 min. warm up
- Stretch group did 20-second static stretches
  - gastroc, soleus, hamstring, quads, hip adductors, hip flexors
- Injury rate in Stretch group = 21.5%  
Control group = 21.8%  
[Med Sc Spor Exer 2000; 32:271-7]


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### No Effect

- Similar findings of 1,093 men in [Australian Journal of Physiotherapy; 44:165-172.]
- Dutch study. Randomized. 16 weeks. 421 recreational runners. Warm up + stretching had no effect on injury risk. 5.5 injuries/1,000 hours in stretch group; 4.9 in control group. [American Journal of Sports Medicine 1993; 21:711-9.]
- Static stretching + dynamic warm-up vs. dynamic warm-up only prior to Australian Rules Football. Static stretching had no effect on performance. [Journal of Science Medicine Sport. 2004; 7(1): 23-31.]


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### Negative Effect

- At worst, ↓ strength, power, speed, endurance, balance, reaction time.
- Decreased force production and muscle activation in quadriceps after static stretching. [European Journal of Applied Physiology, 2005; 93(5-6): 530-539]

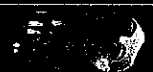
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### Negative Effect

- 30 participants (U. Hawaii)
- Stretched hip, thigh, calf
  - three 15-sec stretches of 5 mm groups
  - three 15-sec assisted stretches same mm
  - 1RM each knee extension and flexion
- Static stretching ↓ knee flexion strength by 7.3% and knee extension by 8.1%  
[Res Q Exerc Sport 1998; 69:411-5]


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### Negative Effect

- Static stretching associated with significant reduction in muscle strength endurance. [J Str Cond Res, 2005; 19(2): 338-343.]
- Static stretching has a negative effect on power (force output) of quadriceps muscles for up to 2 hours, but not on plantar flexors or overall jump height. [Medicine & Science in Sports & Exercise, 2004; 36(8): 1389-1396.]

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### Negative Effect

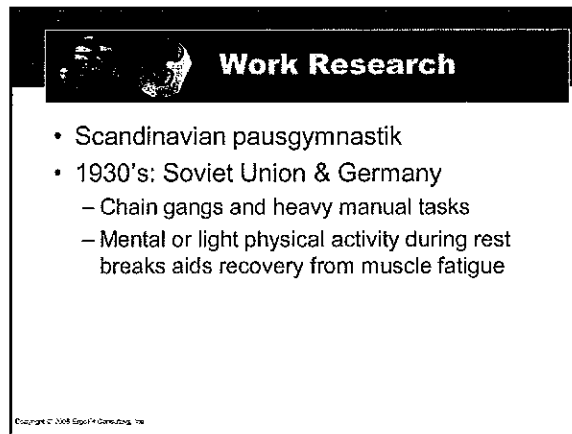
- Reduced balance and reaction times after static stretching [Med Sci Sports Exerc 2004; 36: 1397-402]
- Best running economy in least flexible [Intern J Sports Med 2002; 23: 40-3]
- Slower sprints after 30-sec static stretch of hams, quads, calves [Sports Science 2005; 23: 449-54]
- Slower sprints after static stretching; faster after dynamic stretching [J Str Cond Res, 2004; 18(4): 885-8]

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## Post-Activity / Work Stretch

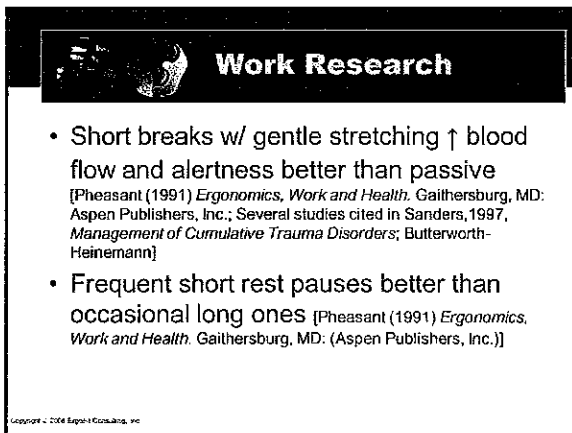
Research



## Work Research

- Scandinavian pausgymnastik
- 1930's: Soviet Union & Germany
  - Chain gangs and heavy manual tasks
  - Mental or light physical activity during rest breaks aids recovery from muscle fatigue

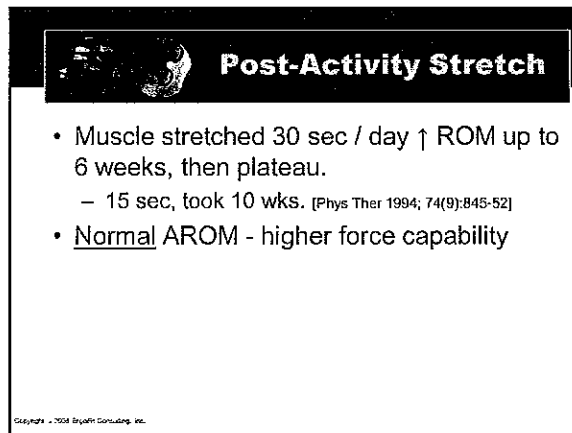
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## Work Research

- Short breaks w/ gentle stretching ↑ blood flow and alertness better than passive [Pheasant (1991) *Ergonomics, Work and Health*. Gaithersburg, MD: Aspen Publishers, Inc.; Several studies cited in Sanders, 1997, *Management of Cumulative Trauma Disorders*; Butterworth-Heinemann]
- Frequent short rest pauses better than occasional long ones [Pheasant (1991) *Ergonomics, Work and Health*. Gaithersburg, MD: (Aspen Publishers, Inc.)]

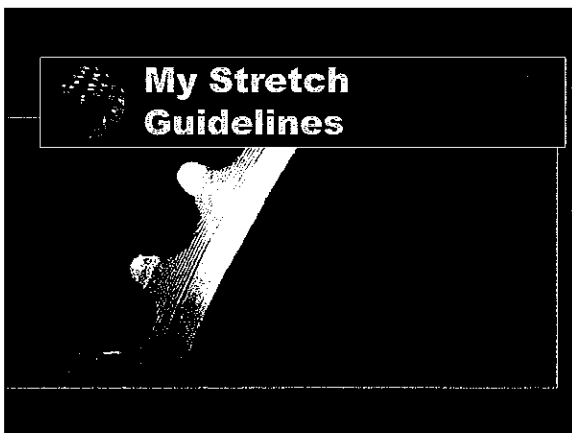
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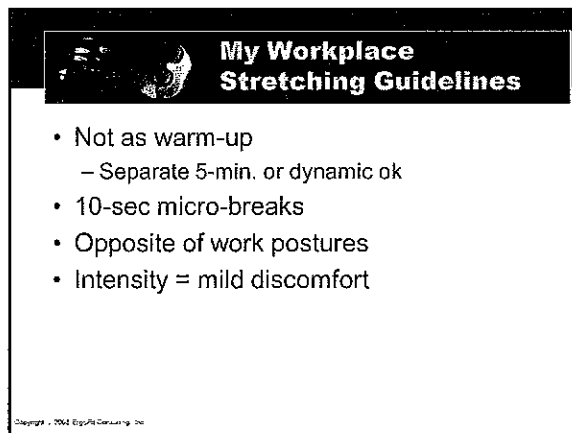
## Post-Activity Stretch

- Muscle stretched 30 sec / day ↑ ROM up to 6 weeks, then plateau.
  - 15 sec, took 10 wks. [Phys Ther 1994; 74(9):845-52]
- Normal AROM - higher force capability

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## My Stretch Guidelines



## My Workplace Stretching Guidelines

- Not as warm-up
  - Separate 5-min. or dynamic ok
- 10-sec micro-breaks
- Opposite of work postures
- Intensity = mild discomfort

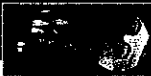
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## My Guidelines

- Developed by expert
- Tailored to common physical demands
  - Tailored to individual best!
- 2-3 days/wk minimum; 5 days/wk great
- 30 sec holds AFTER work!

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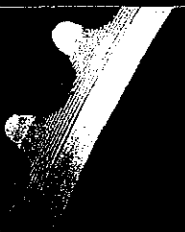
## Precautions!

- Hyperlax ligaments associated w/ injury and pain may be underlying cause of joint injury
- Avoid compensatory recruitment patterns via slow pace learning of appropriate movement patterns

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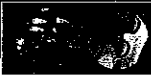


## Joint Stabilization

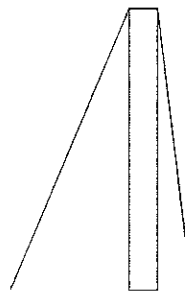


Cutting Edge Innovation!

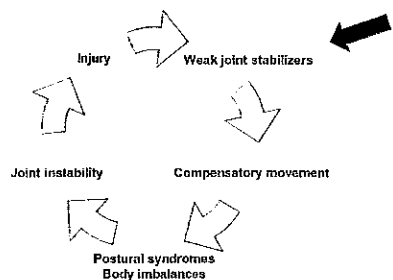
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## Guide Wires



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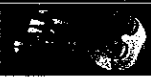
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## Benefits

- Lubricate joints
- Increase blood flow to extremities
- Increase strength + stability of joint structures over time
- Reduce strain / sprain frequency & severity
- Prepare mind + body for work

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## Stretch vs. Stabilize

- Stretching does not strengthen deep stabilizers
- Strengthening deep stabilizers does not stretch tight prime muscles
- Doing both – dynamically - is the ultimate!

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## To Be Cutting Edge...

- BOTH stretch & joint stabilization
- Trained instructors (therapists) to design & monitor
  - Avoid compensatory patterns
  - Individual custom modification / program
- Trained on-site instructors
- Monitor compliance
- Company commitment

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## Questions?

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