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SP.235 / ESG.SP235 Chemistry of Sports
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SP.235: Chemistry of clothing

Wednesday April 29, 2009

Clothing

- Nylon
- Lycra
- Wetsuits

Nylon

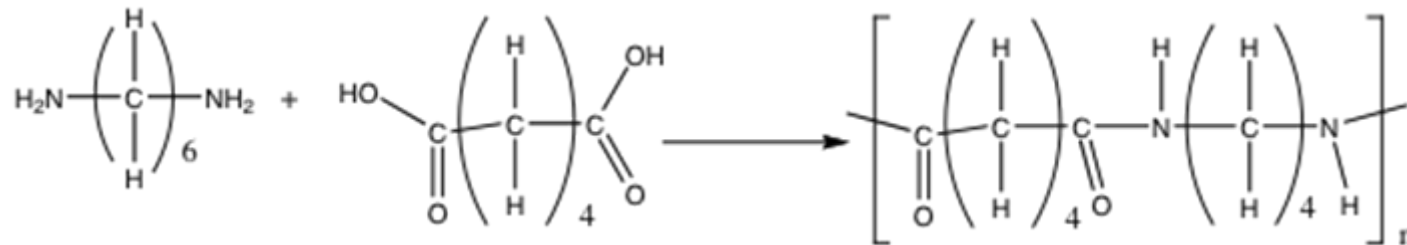
- First prepared in on February 28, 1935 during the depression
- Technically called Nylon 6,6
- Dupont decided to tackle the challenge of substituting nylon for silk in woman's full fashioned hosiery without having to raise the price.

Nylon

- Nylon was an instant market and financial success when it became available in May of 1940. Production of \$9 million sold out with a 33% profit. In the year before World War II, 1941, profits were \$7 million on sales of \$25 million. Du Pont made the nylon for over 60 million pairs of sheer women's hosiery, more than the number of women in the United States at that time

Nylon

- Made from hexamethylene diamine and adipic acid which are derived from the oil industry



Support Hose

- Support Hose increases blood flow up the legs and relieves swelling in the feet
- The stockings work by forcing the blood in the lower leg, where the hose is tightest, up toward the heart
- Used to prevent leg vein thrombosis
- Refer to:
 - Nagourney, Eric. “[VITAL SIGNS: REMEDIES; In Support of Support Hose.](#)” New York Times, August 17, 2004.

Exercise use of Support hose

- See Metzler, Brian. “[Owner's Manual: Do Compression Socks Work?](http://runningtimes.com/Article.aspx?ArticleID=13830)” Running Times, May 2008.
[<http://runningtimes.com/Article.aspx?ArticleID=13830>]

Exercise use of Support Hose

- Example product: [Oxysox, at RevelSports.com](#)

More use of Compression clothing

- Get running/biking compression shorts, compression underwear, calf sleeves,
- A source of compression clothing [here](#)
 - For instance: [Recovery sleeves](#)

Influence of compression therapy on symptoms following soft tissue injury from maximal eccentric exercise.

[Kraemer WJ](#), [Bush JA](#), [Wickham RB](#), [Denegar CR](#), [Gómez AL](#), [Gotshalk LA](#), [Duncan ND](#), [Volek JS](#), [Putukian M](#), [Sebastianelli WJ](#).

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STUDY DESIGN: A between groups design was used to compare recovery following eccentric muscle damage under 2 experimental conditions. **OBJECTIVE:** To determine if a compression sleeve donned immediately after maximal eccentric exercise would enhance recovery of physical function and decrease symptoms of soreness. **BACKGROUND:** Prior investigations using ice, intermittent compression, or exercise have not shown efficacy in relieving symptoms of delayed onset muscle soreness (DOMS). To date, no study has shown the effect of continuous compression on DOMS, yet this would offer a low cost intervention for patients suffering with the symptoms of DOMS. **METHODS AND MEASURES:** Twenty nonimpaired non-strength-trained women participated in the study. Subjects were matched for age, anthropometric data, and one repetition maximum concentric arm curl strength and then randomly placed into a control group (n = 10) or an experimental compression sleeve group (n = 10). Subjects were instructed to avoid pain-relieving modalities (eg, analgesic medications, ice) throughout the study. The experimental group wore a compressive sleeve garment for 5 days following eccentric exercise. Subjects performed 2 sets of 50 passive arm curls with the dominant arm on an isokinetic dynamometer with a maximal eccentric muscle action superimposed every fourth passive repetition. One repetition maximum elbow flexion, upper arm circumference, relaxed elbow angle, blood serum cortisol, creatine kinase, lactate dehydrogenase, and perception of soreness questionnaires were collected prior to the exercise bout and daily thereafter for 5 days. **RESULTS:** Creatine kinase was significantly elevated from the baseline value in both groups, although the experimental compression test group showed decreased magnitude of creatine kinase elevation following the eccentric exercise. Compression sleeve use prevented loss of elbow motion, decreased perceived soreness, reduced swelling, and promoted recovery of force production. **CONCLUSIONS:** Results from this study underline the importance of compression in soft tissue injury management.

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Lycra

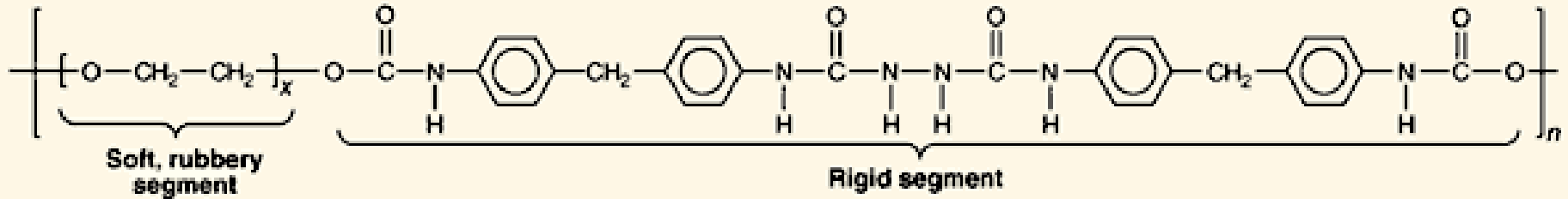
- See “About Lycra Fiber.”

http://www.lycra.com/g_en/webpage.aspx?id=142

What is Spandex?

- See “What is Spandex?”
<http://www.spandexhouse.com/Technical.asp>

Lycra



Chemical structure of Lycra

- History of Lycra: see “About Lycra Fiber.”
http://www.lycra.com/g_en/webpage.aspx?id=142

Lycra

- A lot of clothing contains Lycra
- Examples include: bathing suits, leggings, any cotton blend with a form fitting appearance, gymnastics costumes, cycling shorts, cycling tops

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Wetsuits

- Triathlon Wetsuit 101:
http://www.all3sports.com/info_pages.php?pages_id=16
- Don't want a wetsuit? How about a [swim skin?](#)

Fastskin[®] LZR Racer[®] by Speedo

- The Fastskin[®] LZR Racer[®] is the result of some of the most extensive research in swimwear history.
- Made from an ultra lightweight, low drag, water repellent, fast drying fabric, unique to Speedo, called LZR Pulse[®], the LZR Racer[®] is the world's first fully bonded swimsuit.
- [Speedo website](#), look behind the [technology](#) (pop-up)

What clothing helps you in your sport?