What are the factors that affect the performance of a sprinter?

Does the music a track athlete listens to affect their performance in speed?

Does the water intake of a track athlete affect their performance in their sprint?

How does stretching impact the performance of a track athlete in their sprint?

Test Subjects: Jaycee, Ram & Dan, Harlow

Backups: Karmin, Jayden & Juliet,

Background Information

- ★ What music genre best improves and facilitates superior performance in athletes.
  - https://pmc.ncbi.nlm.nih.gov/articles/PMC8167645/

- ★ What amount of water intake in suitable for the human body?
  - For a 150 lb. female: ~340-477 ml, and for a 200 lb. male: ~455-636 ml.
  - https://puresportsmed.com/blog/posts/the-hydration-debate-how-much-water-do-you-really-need#:~:text=The%20Recommended%20Guidelines,male
- ★ Does the amount of water you have in a day impact your performance in a sprint?
  - The American College of Sports Medicine suggests 5-7 ml of water per kg of body weight before exercise.
  - https://www.betterhealth.vic.gov.au/health/healthyliving/Exercise-the-low-down-on-water-and-drinks
- ★ Does music affect athletic performance
  - https://www.center4research.org/can-listening-music-improve-workout/#:~:text=Studies%20show%20that%20faster%2Dpaced,%2C%20pace%2C%20or%20repetitions%20completed.
- ★ What does water do for the human body
- ★ How do water levels impact the human body.
- ★ What does music do to the mind/body

Experiment Factors and Planning

Participant Data

NAME	Harlow Turner	Kartikeya Pappu	Daniel Emrich	Jaycee
AGE	14	14	14	14
RUNNER #	3	1	2	4
GENDER	Female	Male	Male	Female
WEIGHT	120lbs (54.4kg)	110lbs (50kg)	131.83 lbs. (59.8 kg)	83lbs (37.7kg)
HEIGHT	5’5ft (1.65m)	5’6ft (1.676m)	5’10ft (1.77m)	5’3ft (1.54m)
CLASS	9C	9C	9C	9C

Music

a) Music Genres
   - → Rap - FEIN by Travis Scott ft. Playboi Carti
   - → Pop - California Girls by Katy Perry ft. Snoop Dogg
   - → Classical - Fur Elise by Ludwig van Beethoven
   - → Rock - Thunderstruck by AC/DC
   - → Country - A Bar Song (Tipsy) by Shaboozey
   - → No music
b) Give test subjects time between each run – 3-5min
c) Use each particepants headphones
d) Three Day Activity
e) Do a basic stretching warm-up to prevent injury:
   - → 20 jumping jacks
   - → 20 lunges (10 on each side)
   - → 20 floor sweeps (10 on each side)

RUNNER	RUNNER #1	RUNNER #2	RUNNER #3	RUNNER #4
AGE	14	14	14	14
GENDER	Male	Male	Female	Female
WEIGHT	110lbs (50kg)	131.83 lbs. (59.8 kg)	120lbs (54.4kg)	83lbs (37.7kg)
HEIGHT	5’6ft (1.676m)	5’10ft (1.77m)	5’5ft (1.65m)	5’3ft (1.54m)

RAP MUSIC:

Rap music has been demonstrated to improve workout performance by elevating mood, energy levels, and focus due to its upbeat beats and inspirational lyrics. Because it has a beat, it works especially well for intense workouts. Furthermore, many listeners' emotional attachment to rap might provide them the motivation they need to endure exhaustion. Music tastes are crucial, though, because how well a genre works to improve exercise performance depends greatly on the listener's particular like in it.

POP MUSIC:

Pop music's melodies and lively tempo improve motivation and mood, which in turn improves workout performance. It promotes energy conservation, minimizes perceived effort, and boosts stamina. Pop is perfect for a range of workouts since its rhythmic quality allows for steady pacing. Customized pop music playlists can help increase motivation and focus, which will make working out feel less exhausting. Faster beats are ideal for high-intensity workouts, whilst slower, relaxing music is better suited to recovery or stretching. During workouts, customized music can help maintain motivation and improve attention.

CLASSICAL MUSIC:

Classical music can enhance workouts by promoting relaxation, reducing stress, and improving focus. Studies suggest it helps regulate breathing, making it beneficial for endurance activities like running and yoga. The slower tempo can aid in recovery and stretching, while faster classical pieces may boost motivation. Unlike high-energy genres, classical music creates a calming effect, reducing perceived exertion and making exercise feel easier. It is particularly useful for steady, rhythmic workouts or those requiring concentration.

ROCK MUSIC:

Rock music is highly effective for workouts, particularly strength training and sprints, due to its fast tempos, heavy beats, and intense energy. The strong drum rhythms and powerful guitar riffs boost adrenaline, increase power output, and help maintain focus. Lyrics in rock songs often emphasize perseverance and determination, further motivating athletes. Rock's high BPM can improve sprint performance by encouraging explosive movement. Bands like AC/DC, Metallica, and Foo Fighters are commonly used in workout playlists for their driving energy.

COUNTRY MUSIC:

Country music is less commonly associated with intense workouts and sprints compared to genres like rock or pop. However, its slower tempo and storytelling can be beneficial for steady-state cardio or longer, low-intensity exercises. The soothing nature of country music helps

maintain focus and reduces stress, making it ideal for longer workout sessions, but might not offer the same adrenaline boost needed for sprints.

Works Cited

"6 Tips to Make Working out in Summer's Heat and Humidity More Tolerable - Fitbit Blog." *Google Store*, 2024, blog.fitbit.com/workout-music/. Accessed 6 Feb. 2025.

Ballmann, Christopher G. "The Influence of Music Preference on Exercise Responses and Performance: A Review." *Journal of Functional Morphology and Kinesiology*, vol. 6, no. 2, 8 Apr. 2021, p. 33, https://doi.org/10.3390/jfmk6020033.

Costas Karageorghis, et al. "Why You Should Consider Adding Classical Music to Your Exercise Playlist." *The Conversation*, 15 Jan. 2021, theconversation.com/why-you-should-consider-adding-classical-music-to-your-exercise-playlist-147316.

Garrity, Tanner. "The Most Underrated Musical Genre for Working Out." *InsideHook*, 20 Sept. 2023, www.insidehook.com/wellness/classical-music-exercise.

Hambrick, Jennifer. "Exercising to Classical Music Can Improve Your Workout." *WOSU Public Media*, 29 Jan. 2013, www.wosu.org/classical-101/2013-01-29/exercising-to-classical-music-can-improve-your-workout. Accessed 6 Feb. 2025.

Hilton, Phil. "How Music Can Boost Your Workout – and the Best Songs to Try." *The Telegraph*, May 2024, www.telegraph.co.uk/health-fitness/fitness/workouts/motivating-playlist-music-exercise/.

Lefaive, Sam. "The Power of Music during Exercise." *Nifs.org*, 2021, wellness.nifs.org/blog/the-power-of-music-during-exercise.

Moon, Toya. "How Different Music Genres Impact Workout Performance." *Lenny and Larrys*, 20 Oct. 2023, www.lennylarry.com/blogs/news/how-different-music-genres-impact-workout-

performance?srsltid=AfmBOop_wkVOb0hRP_bKidm9hcngPmmQRhDWI9LD1N__e76C0JFDMhRw. Accessed 6 Feb. 2025.

MOVE Adapted Fitness. "Move Adapted Fitness @ Neuromotion." *Move Adapted Fitness @ Neuromotion*, 10 June 2022, moveadaptedfitness.ca/blog/2022/6/10/how-music-impacts-your-workout-1. Accessed 6 Feb. 2025.

Robertson, Noah . "Rock and Roll: Important Benefits Anyone Can Profit From." *School of Rock*, 21 Feb. 2023, www.schoolofrock.com/resources/music-education/rock-and-roll-important-benefits-anyone-can-profit-from.

Swalwell, Jason. "Impact of Music Genres on Strength Training Performance." *Sportivetricks.co*, Sportive Tricks Strength and Conditioning, 17 June 2024, www.sportivetricks.co/articles/training/282/music-genres-impact-on-strength-training.

Swizz Beatz Online. "Why Rock Music Is Perfect for Working out - Swizz Beatz Online." *Swizz Beatz Online*, 9 Mar. 2023, swizzbeatzonline.com/why-rock-music-is-perfect-for-working-out/. Accessed 6 Feb. 2025.

Thakare, Avinash E, et al. "Effect of Music Tempo on Exercise Performance and Heart Rate among Young Adults." *International Journal of Physiology, Pathophysiology and Pharmacology*, vol. 9, no. 2, 15 Apr. 2017, p. 35, pmc.ncbi.nlm.nih.gov/articles/PMC5435671/.

"The Effect of Music on Workout and Recovery." *Gloveworx*, www.gloveworx.com/blog/effect-music-workout-and-recovery/.

"This Is the Best Music to Listen to While Exercising." *The Independent*, 17 Feb. 2021, www.independent.co.uk/health_and_wellbeing/exercise-running-tips-classical-music-b1803621.html.

DATA COLLECTION - MUSIC

Music Genres – Runner 1	Speed/Run Time
RAP – FEIN by Travis Scott ft. Playboi Carti	7.91 seconds
POP – California Girls by Katy Perry ft. Snoop Dogg	7.96 seconds
CLASSICAL – Fur Elise by Ludwig van Beethoven	8.43 seconds
ROCK – Thunderstruck by AC/DC	8.08 seconds
COUNTRY – A Bar Song (Tipsy) by Shaboozy	7.93 seconds
NO MUSIC	8.05 seconds

Music Genres – Runner 2	Speed/Run Time
RAP – FEIN by Travis Scott ft. Playboi Carti	8.02 seconds
POP – California Girls by Katy Perry ft. Snoop Dogg	8.05 seconds
CLASSICAL – Fur Elise by Ludwig van Beethoven	7.75 seconds
ROCK – Thunderstruck by AC/DC	7.70 seconds
COUNTRY – A Bar Song (Tipsy) by Shaboozy	7.75 seconds
NO MUSIC	7.91 seconds

Music Genres – Runner 3	Speed/Run Time
RAP – FEIN by Travis Scott ft. Playboi Carti	9.56 seconds
POP – California Girls by Katy Perry ft. Snoop Dogg	8.86 seconds
CLASSICAL – Fur Elise by Ludwig van Beethoven	9.11 seconds
ROCK – Thunderstruck by AC/DC	9.18 seconds
COUNTRY – A Bar Song (Tipsy) by Shaboozy	8.87 seconds
NO MUSIC	9.28 seconds

Music Genres – Runner 4	Speed/Run Time
RAP – FEIN by Travis Scott ft. Playboi Carti	8.65 seconds
POP – California Girls by Katy Perry ft. Snoop Dogg	8.66 seconds
CLASSICAL – Fur Elise by Ludwig van Beethoven	8.27 seconds
ROCK – Thunderstruck by AC/DC	8.15 seconds
COUNTRY – A Bar Song (Tipsy) by Shaboozy	9.13
NO MUSIC	9.30 seconds

HYPOTHESIS:

Runners listening to high-tempo, high-energy music with a strong beat, such as *Rock - Thunderstruck by AC/DC*, will complete a 40-meter sprint faster than those listening to slower-tempo genres like *Classical - Fur Elise by Ludwig van Beethoven* or no music, due to the motivational and pacing effects of the music.

ANALYSIS:

Rap music (FEIN by Travis Scott, featuring Playboi Carti):
Effectiveness: 80% effective across all participants. It provided the fastest average run times, and the majority of participants delivered their finest results in this genre.

Rock music (AC/DC's Thunderstruck):
75% effective. Many individuals saw an improvement in their run times, particularly those who thrive on energetic rhythms, although it was not as widely successful as Rap.

Pop music (California Girls by Katy Perry featuring Snoop Dogg):
60% effective. This genre demonstrated moderate improvement, with some individuals performing well while others only marginally improved or maintained their speeds from the No Music condition.

Country music (A Bar Song by Shaboozey):
The effectiveness rate is 55%. Although some participants showed minor gains, the genre's impact on reducing run times was not as great as that of Rap or Rock.

Classical music (Fur Elise by Beethoven):
Effectiveness: 40%. The majority of participants performed more slowly when listening to this genre, suggesting that its soothing qualities might not have been the best for increasing speed in this kind of task.

No music:
50% effectiveness. The majority of subjects displayed a little decline in performance, making this the baseline condition, even if several had comparatively quick run times without music.

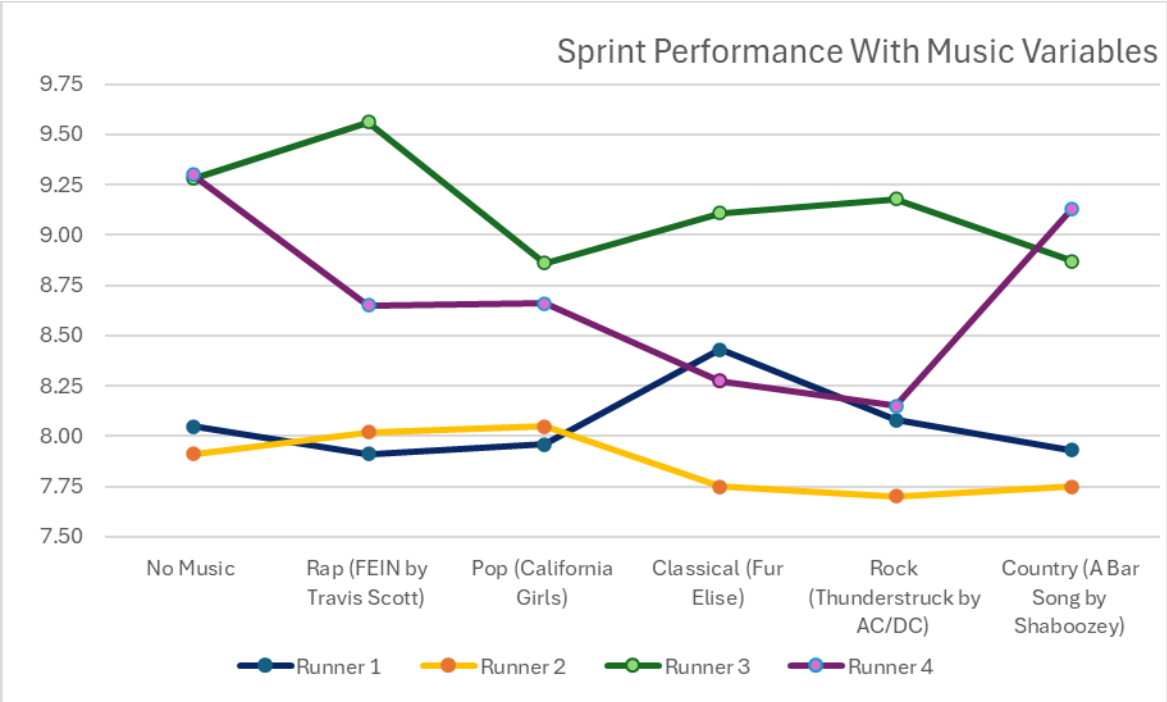
TABLE:

Music Genre	Runner 1	Runner 2	Runner 3	Runner 4
Rap (FEIN by Travis Scott)	7.91 seconds	8.02 seconds	9.56 seconds	8.65 seconds
Pop (California Girls)	7.96 seconds	8.05 seconds	8.86 seconds	8.66 seconds
Classical (Fur Elise)	8.43 seconds	7.75 seconds	9.11 seconds	8.27 seconds
Rock (Thunderstruck by AC/DC)	8.08 seconds	7.70 seconds	9.18 seconds	8.15 seconds
Country (A Bar Song by Shaboozey)	7.93 seconds	7.75 seconds	8.87 seconds	9.13 seconds
No Music	8.05 seconds	7.91 seconds	9.28 seconds	9.30 seconds

CONCLUSION:

The study examined the impact of different music genres on the running times of four subjects. It is quite evident from the findings that while different music genres had different impacts on the individuals, some genres stood out in improving performance. For most participants within our sample, the best performing Rap song was “FEIN” by Travis Scott featuring Playboi Carti. This suggests that songs with a strong beat and a lot of energy such as the examples given above have a positive impact on speed. However, for most participants the best performing song in the Classical music genre was Beethoven’s “Fur Elise.” This suggests that the calming nature of this genre might be counterproductive in our experiment.

GRAPH :



Water Intake

a) Over the course of 4 days
b) Each day is a different amount of water (100, 300, 500, 700 mL)
c) Cannot consume any additional water or other liquids that day before the experiment
d) Water provided 5 min before experiment
e) Do a basic stretching warm-up to prevent injury:
   → 20 jumping jacks
   → 20 lunges (10 on each side)
   → 20 floor sweeps (10 on each side)

100ML

Drinking 100mL of water helps with hydration, digestion, and circulation, but it's a small amount compared to daily needs. Staying hydrated is important for energy, focus, and overall health. Your body absorbs the water quickly, and your kidneys may filter out any extra. To stay properly hydrated, you should drink water regularly throughout the day.

300ML

Drinking 300mL of water before a race helps hydrate your body, preventing dehydration that can cause fatigue and cramps. It supports blood circulation, ensuring oxygen reaches your muscles efficiently. Water also helps regulate body temperature, preventing overheating while you run.

500ML

Drinking 500mL of water before a race can be helpful for hydration, preventing cramps, fatigue, and overheating. However, for some runners, this amount might feel like too much if consumed all at once, leading to stomach discomfort or bloating. It's usually better to drink smaller amounts in the hours leading up to the race rather than chugging it all at once

700ML

Drinking 700mL of water before a race can provide good hydration, helping with blood circulation, muscle function, and temperature regulation. Though this might be too much too close to the race, leading to stomach discomfort, bloating, or frequent bathroom trips. Instead of drinking it all at once, it's better to spread out hydration over the hours before the race, stopping about 30-60 minutes before the start to allow your body to absorb the water.

Works Cited

Chong, Emily. "What Happens If You Drink Too Much Water?" *Healthish*, July 2022, healthish.com/blogs/healthish/what-happens-if-you-drink-too-much-water. Accessed 18 Feb. 2025.

https://www.facebook.com/WebMD. "Slideshow: What Happens to Your Body When You Drink Enough Water?" *WebMD*, 2019, www.webmd.com/a-to-z-guides/ss/slideshow-drink-enough-water.

https://www.facebook.com/webnewsobserver. "What Is Water Toxicity? 6 Side Effects of Drinking Too Much Water." *Web News Observer*, 8 Aug. 2023, webnewsobserver.com/what-is-water-toxicity-6-side-effects-of-drinking-too-much-water/. Accessed 18 Feb. 2025.

May 13, Michele Promaulayko, and 2021. "Surprising Side Effects of Drinking Too Much Water, Says Science." *Eat This Not That*, 13 May 2021, www.eatthis.com/side-effects-drinking-too-much-water/.

Ohashi, Yasushi, et al. "Dry Weight Targeting: The Art and Science of Conventional Hemodialysis." *Seminars in Dialysis*, vol. 31, no. 6, 6 June 2018, pp. 551–556, https://doi.org/10.1111/sdi.12721.

Post, LDN Guest. "The Hidden Health Dangers of Drinking Too Much Water | London Daily News." *London Daily News*, 5 June 2024, www.londondaily.news/the-hidden-health-dangers-of-drinking-too-much-water/. Accessed 18 Feb. 2025.

"The Health Benefits of Drinking Water — National Accord Newspaper %." *National Accord Newspaper*, 15 July 2020, www.nationalaccordnewspaper.com/the-health-benefits-of-drinking-water/. Accessed 18 Feb. 2025.

Younghans, Samantha Faragalli. "Yes, You Can Drink Too Much Water—Here's What It Does to Your Body." *Eat This Not That*, 4 Feb. 2020, www.eatthis.com/drink-too-much-water/. Accessed 18 Feb. 2025.

DATA COLLECTION - WATER

Water Intake – Runner 1	Speed/Run Time
100ml	8.47 seconds
300ml	7.94 seconds
500ml	8.87 seconds
700ml	8.90 seconds
NO WATER BEFORE	8.05 seconds

Water Intake – Runner 2	Speed/Run Time
100ml	7.61 seconds
300ml	7.96 seconds
500ml	8.12 seconds
700ml	8.13 seconds
NO WATER BEFORE	7.91 seconds

Water Intake – Runner 3	Speed/Run Time
100ml	9.21 seconds
300ml	9.15 seconds
500ml	9.50 seconds
700ml	9.87 seconds
NO WATER BEFORE	9.28 seconds

Water Intake – Runner 4	Speed/Run Time
100ml	8.89 seconds
300ml	8.29 seconds
500ml	9.07 seconds
700ml	8.51 seconds
NO WATER BEFORE	9.30 seconds

HYPOTHESIS:

The 300 mL group will have the fastest average 40-meter sprint times, followed by the 500 mL group, then the 100 mL group, and finally the 700 mL group. This is because 300 mL provides enough hydration to boost performance without causing stomach discomfort, while higher amounts like 700 mL may slow runners down due to bloating or heaviness.

ANALYSIS:

The statistics show that water consumption amount affects the running pace differently for each athlete. Overall, 300mL was the optimal amount, resulting in the fastest or near-fastest times for the majority of runners. Runner 2 fared best with 100mL, indicating that a little to moderate amount of water is beneficial. On the other hand, 700mL was the slowest for nearly all runners, which most likely caused discomfort. Lack of water also resulted in slower timings for some, demonstrating the need of hydration. In conclusion, 300mL appears to be the optimal balance, but 700mL or no water may slow runners down.

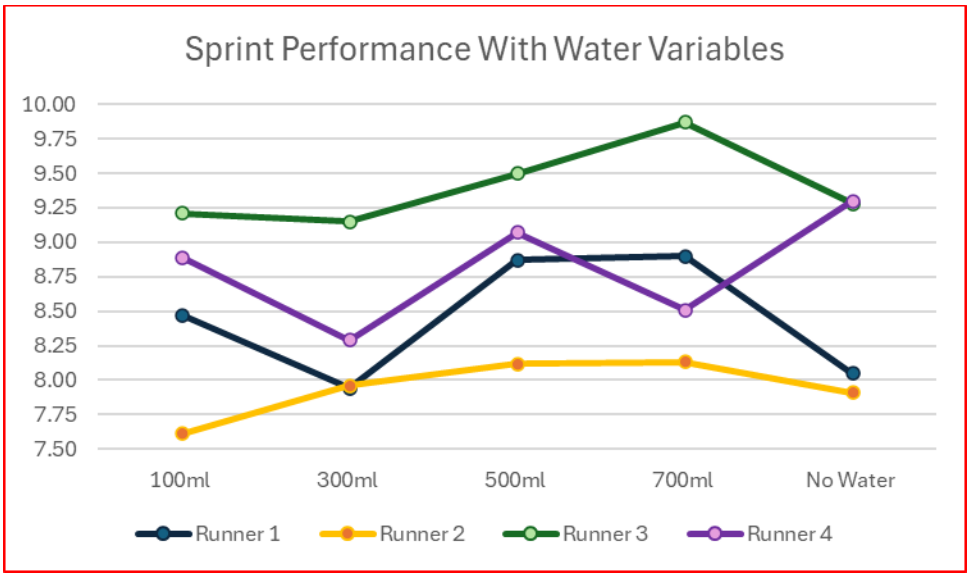
TABLE:

Water Intake	Runner 1	Runner 2	Runner 3	Runner 4
100ml	8.47 seconds	7.61 seconds	9.21 seconds	8.89 seconds
300ml	7.94 seconds	7.96 seconds	9.15 seconds	8.29 seconds
500ml	8.87 seconds	8.12 seconds	9.5 seconds	9.07 seconds
700ml	8.9 seconds	8.13 seconds	9.87 seconds	8.51 seconds
No Water	8.05 seconds	7.91 seconds	9.28 seconds	9.3 seconds

CONCLUSION:

Overall, the findings prove that hydration is important in a runners performance, but the amount of water consumed before the run can significantly alter the results. 300ml of water appears to be the ideal intake level, as it maximizes the advantages without causing discomfort or slower run times. Drinking too much water (500ml or 700ml) slows runners down, and while some people function fine without water, others notice a loss of speed. These findings highlight importance of individual hydration plans depending on body type in order to attain optimal sports performance.

GRAPH:


Sprint Performance With Water Variables
10.00
9.75
9.50
9.25
9.00
8.75
8.50
8.25
8.00
7.75
7.50
100ml
300ml
500ml
700ml
No Water
Runner 1
Runner 2
Runner 3
Runner 4

Stretching

a) Give test subjects time between each run – 3-5min
b) Do a basic stretching warm-up to prevent injury:
    → 20 jumping jacks
    → 20 lunges (10 on each side)
    → 20 floor sweeps (10 on each side)
c) Dynamic Stretches
    → Stretch Neck, by holding in each direction for 30 seconds
    → Arm Circles, forward 30 seconds and backward thirty seconds
    → Hula Hooping movement, both directions 30 seconds each
    → Rotate ankle and wrists for 30 seconds each
    → Hula Hooping movement for 30 seconds each for the knees.
    → Fast Feet: Alternate from one foot to another when standing in one spot
    → Stagers: Alternate from one foot to another, but keep one foot slightly ahead and the other foot slightly behind
    → In & Outs: Bring both feet stimulatingly slightly outside shoulder width and then bring them closer to your body.
d) Static Stretches
    → Seated forward fold for 10 seconds two times with a 10 second break in between
    → Laying quadriceps stretch for 15 seconds a side
    → Butterfly pulses for 20 seconds
    → Wall sit for 30 seconds
    → Plank for 30 seconds

DYNAMIC STRETCHING:

Dynamic stretching involves moving your muscles and joints through a full range of motion without holding a position. It helps increase blood flow, raise muscle temperature, and improve coordination. By mimicking the movements of a workout or sport, dynamic stretching prepares the body for activity and reduces the risk of injury.

STATIC STRETCHING:

Static stretching is when you hold a stretch for a certain period, usually between 15 to 60 seconds. It is best done after exercise to relax muscles, reduce tension, and improve flexibility. This type of stretching can also help with posture and recovery, but doing it before intense activity may temporarily reduce muscle strength.

BOTH TYPES OF STRETCHING:

Dynamic and static stretching are two important ways to improve flexibility and movement. While both help prevent injuries and keep muscles healthy, they are used at different times. Dynamic stretching is best before exercise to warm up the body, while static stretching is better after exercise to relax muscles and improve flexibility. Using both types in a routine can help with performance and recovery.

Works Cited

Behm, David G, et al. "Acute Effects of Various Stretching Techniques on Range of Motion: A Systematic Review with Meta-Analysis." *Sports Medicine - Open*, vol. 9, no. 1, 14 Nov. 2023, https://doi.org/10.1186/s40798-023-00652-x.

Massachusetts Institute of Technology. "STRETCHING and FLEXIBILITY - Types of Stretching." *Web.mit.edu*, web.mit.edu/tkd/stretch/stretching_4.html.

Mayo Clinic Staff. "Stretching: Focus on Flexibility." *Mayo Clinic*, 12 Feb. 2022, www.mayoclinic.org/healthy-lifestyle/fitness/in-depth/stretching/art-20047931.

Page, Phil. "CURRENT CONCEPTS in MUSCLE STRETCHING for EXERCISE and REHABILITATION." *International Journal of Sports Physical Therapy*, vol. 7, no. 1, Feb. 2012, p. 109, pmc.ncbi.nlm.nih.gov/articles/PMC3273886/.

---. "CURRENT CONCEPTS in MUSCLE STRETCHING for EXERCISE and REHABILITATION." *International Journal of Sports Physical Therapy*, vol. 7, no. 1, Feb. 2012, p. 109, pmc.ncbi.nlm.nih.gov/articles/PMC3273886/.

Physiopedia. "Stretching." *Physiopedia*, 2023, www.physio-pedia.com/Stretching.

"The Different Types of Stretching & the Benefits." *Sheltering Arms Institute*, shelteringarmsinstitute.com/rehablogs/the-different-types-of-stretching-the-benefits/.

RUNNER	RUNNER #3	RUNNER #1	RUNNER #2	RUNNER #4
AGE	14	14	14	14
GENDER	Female	Male	Male	Female
WEIGHT	120lbs (54.4kg)	110lbs (50kg)	131.83 lbs. (59.8 kg)	83lbs (37.7kg)
HEIGHT	5'5ft (1.65m)	5'6ft (1.676m)	5'10ft (1.77m)	5'3ft (1.54m)

DATA COLLECTION – STRETCH

Stretch Testing – Runner 1	Speed/Run Time
Dynamic	8.52 seconds
Static	9.22 seconds
BASIC WARM UP	8.05 seconds

Stretch Testing – Runner 2	Speed/Run Time
Dynamic	8.00 seconds
Static	7.64 seconds
BASIC WARM UP	7.91 seconds

Stretch Testing – Runner 3	Speed/Run Time
Dynamic	8.64 seconds
Static	8.85 seconds
BASIC WARM UP	9.28 seconds

Stretch Testing – Runner 4	Speed/Run Time
Dynamic	8.87 seconds
Static	8.38 seconds
BASIC WARM UP	9.3 seconds

HYPOTHESIS:

Runners who perform dynamic stretches before a 40-meter sprint will achieve faster times compared to those who perform static stretches, as dynamic stretching better prepares the body for the demands of short, high-intensity running.

ANALYSIS:

The average times show that static stretching led to the fastest times for most runners, with three out of four runners improving their performance. Dynamic stretching, while beneficial for some, resulted in slower times for most runners compared to the basic warm-up. The basic warm-up itself showed consistent results, with times generally between dynamic and static stretching. For some runners, dynamic stretching was slightly slower, while static stretching either improved or maintained performance. Overall, static stretching had a noticeable effect on performance compared to the other methods.

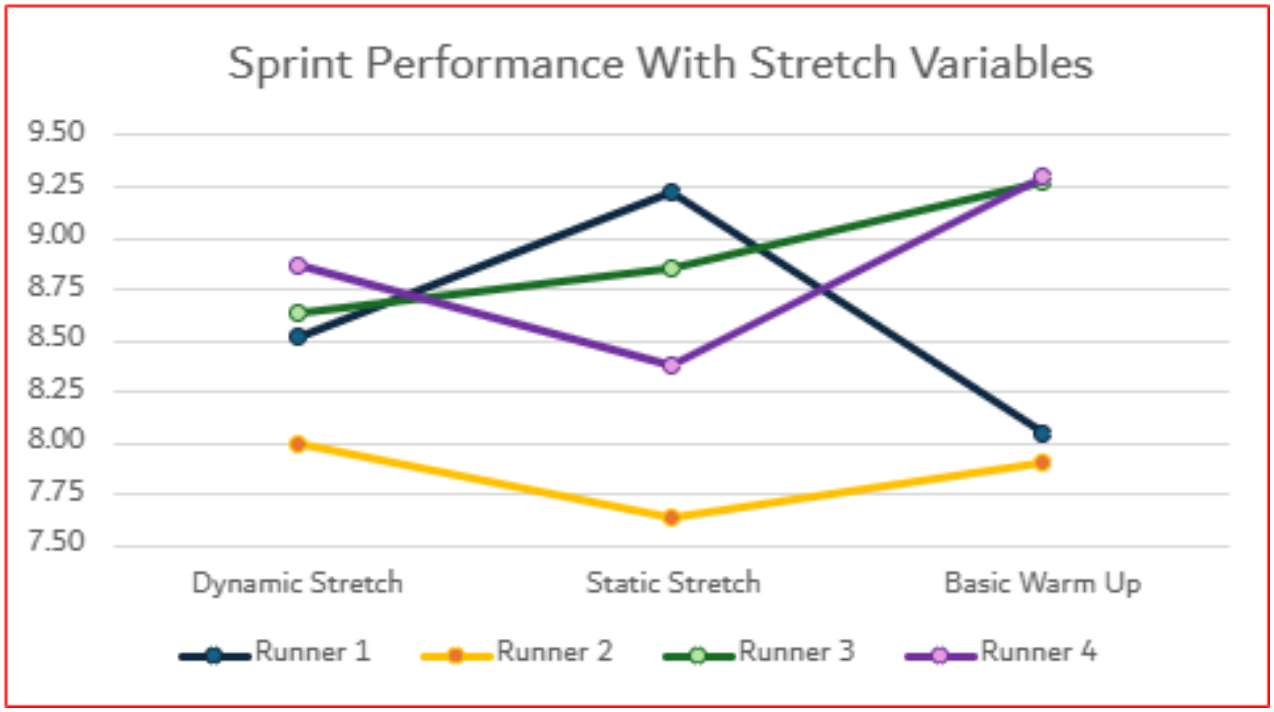
TABLE:

Runner #	Dynamic Stretching	Static Stretching	Basic Warm-Up
Runner 1	8.52 seconds	9.22 seconds	8.05 seconds
Runner 2	8.00 seconds	7.64 seconds	7.91 seconds
Runner 3	8.64 seconds	8.85 seconds	9.28 seconds
Runner 4	8.87 seconds	8.38 seconds	9.3 seconds

CONCLUSION:

On average, static stretching produced the fastest times for the group, going above dynamic stretching and the basic warm-up. Dynamic stretching worked well for some runners, but it resulted in slower timings than static stretching. The basic warm-up worked as a neutral baseline, with runners' timings comparable to those after dynamic stretching. Static stretching resulted in the most consistent improvement, particularly when compared to the conventional warm up. Overall, static stretching was the most effective method for enhancing sprint performance among the runners.

GRAPH:


Sprint Performance With Stretch Variables
9.50
9.25
9.00
8.75
8.50
8.25
8.00
7.75
7.50
Dynamic Stretch
Static Stretch
Basic Warm Up
Runner 1
Runner 2
Runner 3
Runner 4