

EDspaces

Designing the Future of Education

Columbus, OH | November 5-7, 2025

Project Vitality

November 6, 2025 4pm-5pm



Speakers



Brook Kennedy, MFA
Professor, Industrial Design
Virginia Tech



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Steelcase



Project Vitality

Encouraging activity for cognitive performance
in higher ed. learning environments

EDspaces Conference, November 6th 2025, 4pm

Steelcase

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TECH

INSTITUTE FOR CREATIVITY,
ARTS, AND TECHNOLOGY
VIRGINIA TECH.

Research Team

Faculty Researchers:

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Industry Partner:

Andrew Kim, Mdes., Director, WorkSpace Futures, Steelcase

Faculty Advisors:

Stella Volpe, Ph.D., Professor, Health and Human Nutrition, Virginia Tech

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Sarah Parker, Ph.D., Professor, Carilion School of Medicine, Virginia Tech

Faculty + Student Research Assistants:

Jason Cusack, M.Arch, Instructor and Lead Research Assistant

Jessica Bryan, Ph.D. candidate Health and Human Nutrition

Karissa Konezny (ID + Design Research)

Emersen Sweeney (ID)

Claudia Kellam (ID)

Sara Truffant (ID)

Charlie Higgins (ID)

Topics for Discussion

Steelcase Foundation

Project Vitality Background

Process and Methods

Insights and Learnings

Takeaways and Opportunities

Defining Wellbeing

- **MEANING** to create purpose
- **BELONGING** to be part of
- **AUTHENTICITY** to be oneself
- **MINDFULNESS** to be aware and open
- **OPTIMISM** to be positive
- **VITALITY** to be healthy and active



We Observe

People are in pain

User today:

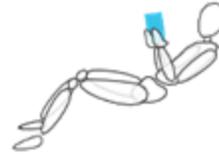
1. **Hunch forward** to see laptops and small devices – the body follows the eyes.
2. **Leave the arms without support** when conducting precision tasks like mousing.
3. **Decrease blood flow** in the legs by sitting in positions for long durations.
4. **Have no respite**: Because we are always “on” and use our devices anywhere, anytime.

Technology Has Led to New Postures

We formed a global sitting posture research team. **2000+ people** participating in the global sitting posture research covering **6 continents**.

New **technologies** combined with new **behaviors** have led to **NINE NEW POSTURES**.

1. THE DRAW



2. THE MULTI-DEVICE



3. THE TEXT



4. THE COCOON



5. THE SWIPE



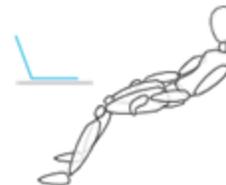
6. THE SMART LEAN



7. THE TRANCE



8. THE TAKE IT IN



9. THE STRUNCH



Comfort

A flexible back allows for micro-movements and fidgeting, and the soft edge allows students to comfortably rest their arm in any posture.



Topics for Discussion

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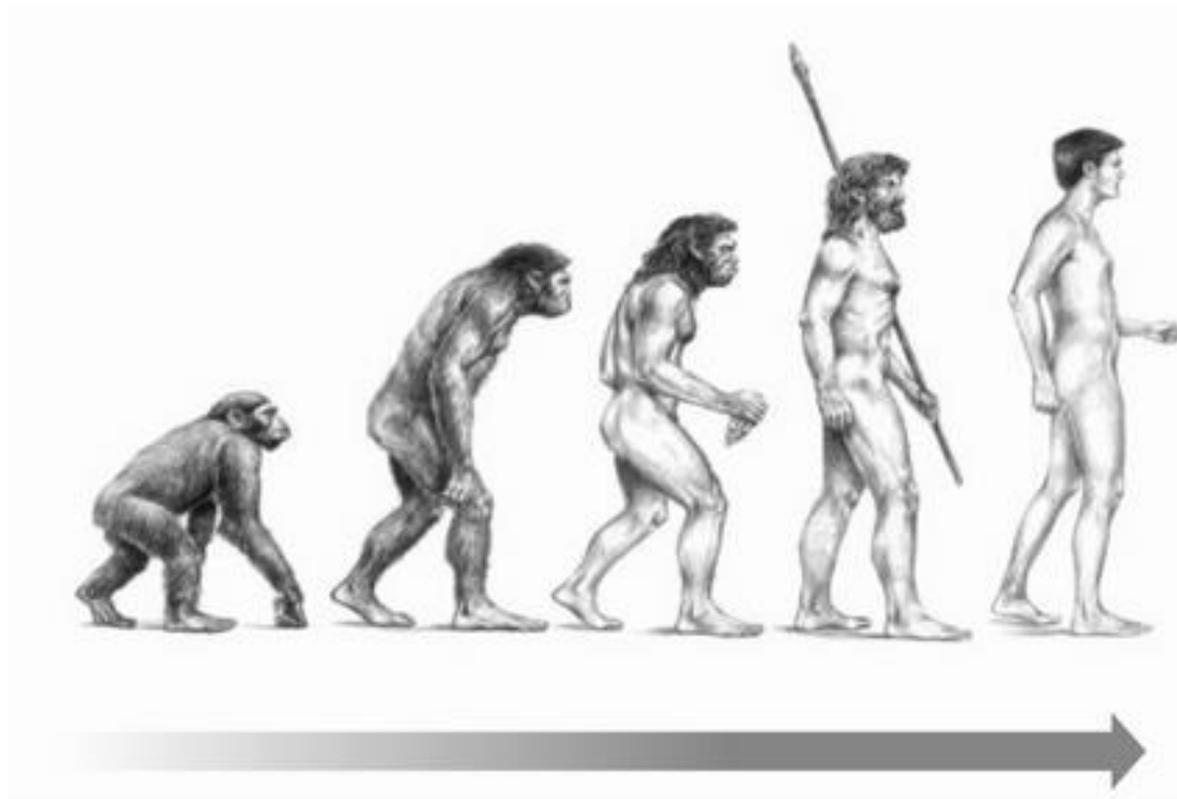
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Evolving towards inactivity



“Homo sedens”¹

Growing evidence suggests that inactive behaviors impact human health *and cognitive performance*.

Decline of 'Micro-movements'

How will automation impact our bodies and cognition?



Manual operation



Turning & Movement



Integrated activity



Our research question:

Can the design of learning environments further encourage healthy physical activity to foster cognitive performance for learning engagement?

Defining ‘Cognitive Vitality’

Cognitive Vitality denotes mental performance in educational tasks in terms of speed, focus, engagement and motivation

Cognitive vitality *does not* include the quality of performance in these tasks

Cognitive vitality also does not denote emotional wellbeing

Physical Activity Definition:

Light to moderate Metabolic Equivalents of Task (METs)

This table gives examples of light-, moderate-, and vigorous-intensity activity for healthy adults:

Light (1.6-3.0 METs)	Moderate (3.0-6.0 METs)	Vigorous (6.0+ METs)
<ul style="list-style-type: none"> • Walking—slowly • Sitting—using computer • Standing—light work (cooking, washing dishes) • Fishing—sitting • Playing most instruments 	<ul style="list-style-type: none"> • Walking—very brisk (4 mph) • Cleaning—heavy (washing windows, vacuuming, mopping) • Mowing lawn (walking power mower) • Bicycling—light effort (10–12 mph) • Badminton—recreational • Tennis—doubles 	<ul style="list-style-type: none"> • Walking/hiking • Jogging at 6 mph • Shoveling • Carrying heavy loads • Bicycling fast (14–16 mph) • Basketball game • Soccer game • Tennis—singles

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Project Approach: Iterative and Human-Centered

Phase 1: Understand

- Science literature review
- User and expert interviews
- Observation and surveys
- Learning environment analysis
- Competitive audit analysis
- Identify design-actionable themes

Phase 2: Ideation + Testing

- Research-based ideation with students
- Narrowing + rough prototyping
- Structured focus groups
- Identify design-actionable themes

Phase 3: Analysis + Synthesis

- Co-design ID studio
- Analyze overall feedback
- Share outcomes and opportunities
- Refine leading prototype(s)
- (Remaining: Define action areas for further development)

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Scientific Literature Review: Highlights

- Numerous studies linked physical activity with improved cognitive functioning, some focusing specifically on learning environments. One emphasized the need for more data to confirm a causal link. (Yu et al., 2023; Erickson et al., 2018; Donnelly et al., 2016; CDC, 2025, WHO, 2024 Ciria et al., 2023))
- Recent studies connect stretching specifically with with improved cognitive functioning. Tamura et al. showed that stretching led to more positive engagement and speed in task completion, not accuracy. (Tamura et al., 2022; Sudo et al., 2015; Imagawa et al., 2018)
- Efficacy of behavior change technologies such as activity tracking devices show promise but lack sufficient data. Some researchers have documented that physical activity may require additional motivational strategies beyond wearable technology. (Shin et al., 2018; Chaudhry et al., 2020).

Survey Highlights

27 respondents
23 students, 4 faculty

- Q10** Desirability of having more mental energy during the day:
70% reported “highly interested or extremely interested”
- Q11** Motivations to stay active and exercise:
32% replied improving energy levels
46% replied staying healthy
18% replied losing weight
- Q24** What stops you from being more active?
48% said fear of getting sweaty
33% said few opportunities to be active
- Q30** Standing Desks and active stools:
52% tried standing desks or active stools with positive appraisal
- Q35** Digital health tracker use:
63% use digital activity trackers with mostly favorable review
- Q42** Faculty acceptance of motion in class:
All surveyed faculty reported willingness to restructure class to let students move more

Interviews and Observation Highlights

College-aged students seek to move, **stretch**, reorient and 'wiggle.' Some classroom seating limits natural motion.



“

If I sit, that sitting needs to still be somewhat active. I personally need to rotate, bend, shift, slide, flex, get up and sit back down, or change to a standing position. Generally, I simply need to alter my seating position throughout the sitting session every couple of minutes....There are two things that can restrict my movements while seated: the seat itself ... and the social situation in which I am seated.

“

I like the school chairs with integrated desks; they help me twist and crack my back by giving me something to hold onto.

P.T. recommended stretches



Shoulder stretch



Shoulder and neck stretches



Hip and knee flexion stretch



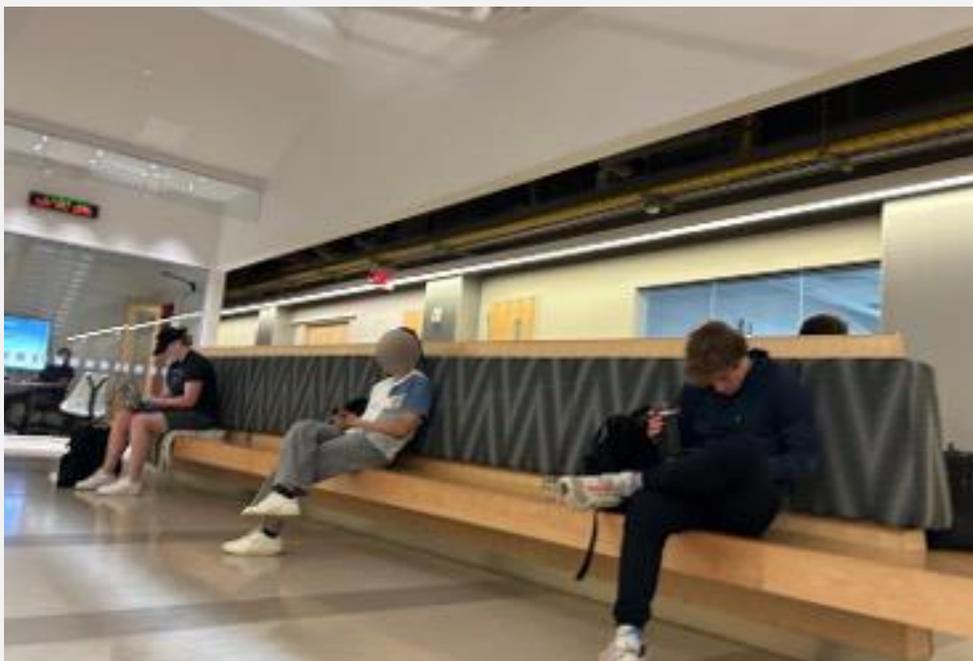
Torso stretch, or trunk rotation



Dead hang stretch

Interstitial Spaces: Encouraging Active Behaviors

10-100min waiting period before class



Active furniture categories

Encouraging standing, perching, moving and swiveling



Dynamic seating



Perching



Swivel and flex



Standing Desks



Behavior Change Tech

Opportunity:

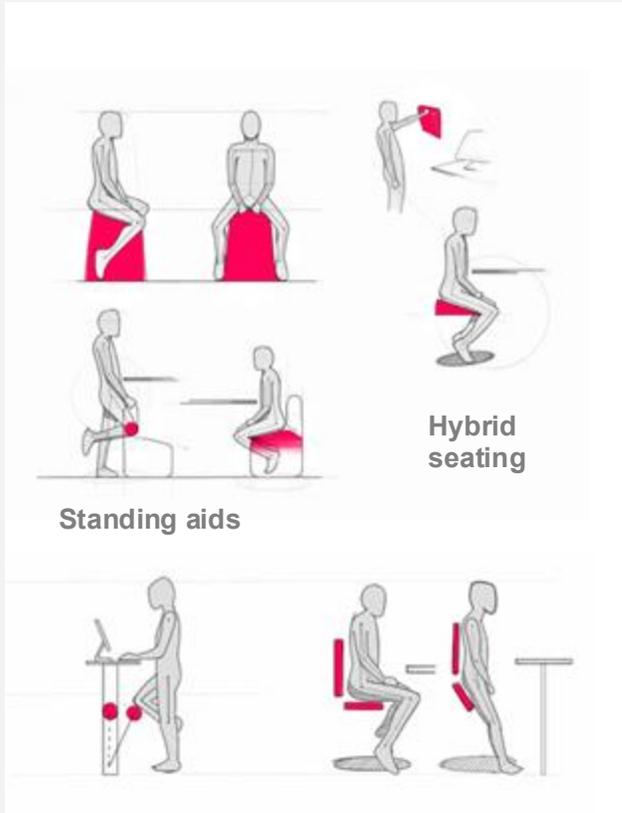
- Stretching
- Hybrid activity for interstitial spaces

Project Vitality

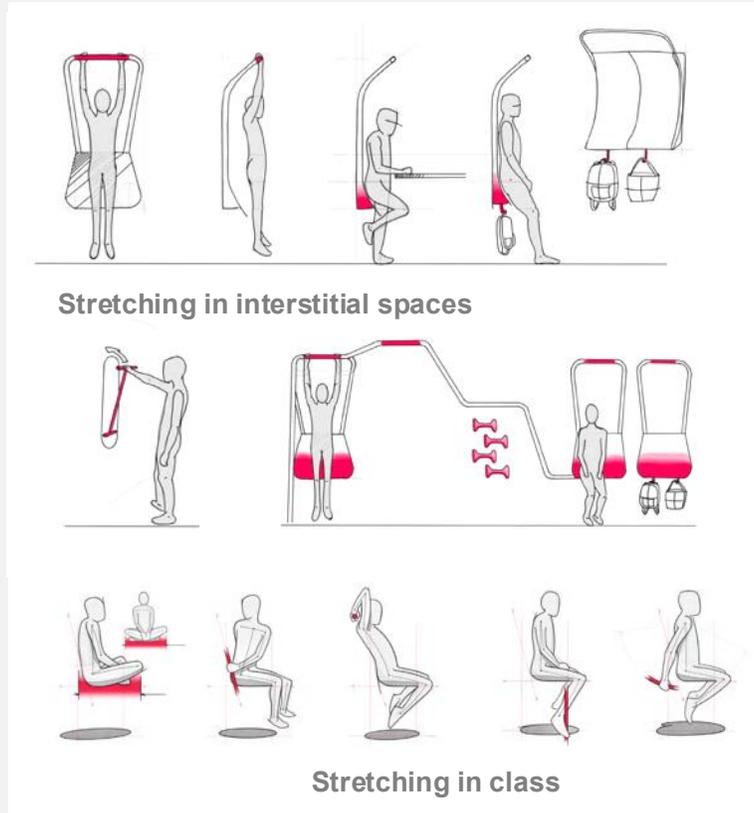
Audience Activity:

- **Get up and stretch for a few moments. Use the furniture around you to help. Observe how others do this.**
- **Reflect on some ways that the built environment could help you better sit, perch and stretch to be more active (5min).**
- **Discuss in a group of 2 to 3 to define a principle or takeaway: How might you change the environment to support more activity? Share your ideas or thoughts (5-10min).**

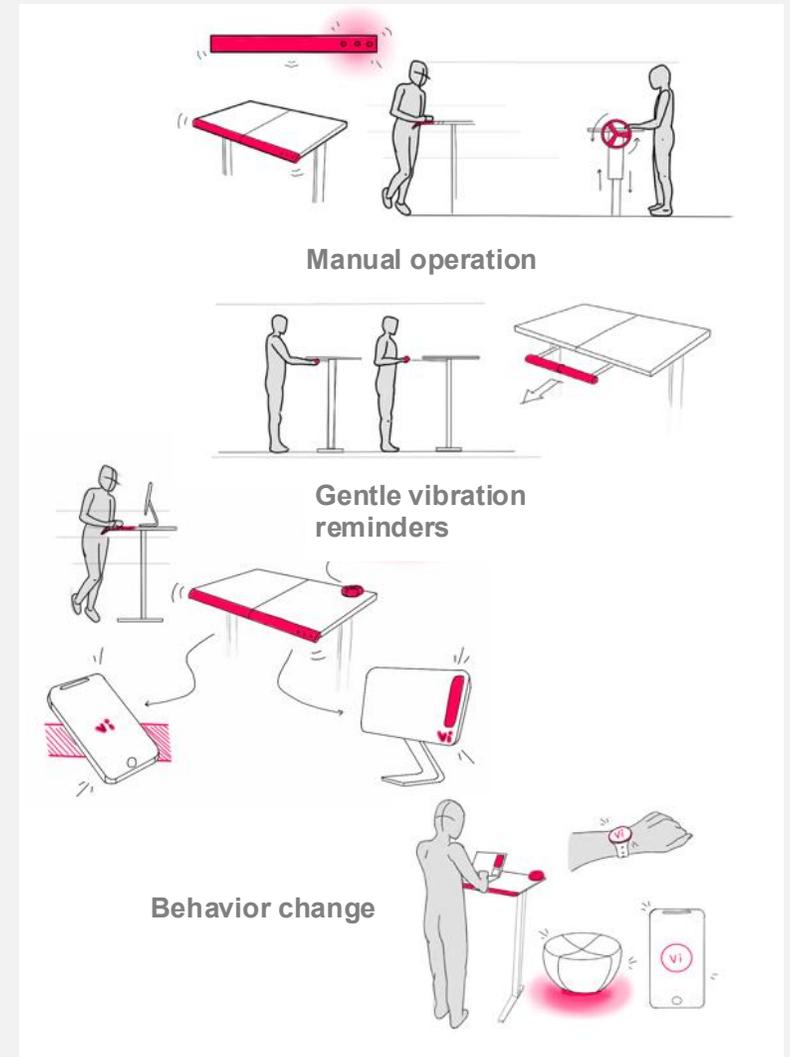
Research driven concepts



Dynamic sit/ standing



Encouraging stretching & standing



Encouraging micro-movements

Stimulus Development

Low-fidelity behavioral prototypes



Experiential and usable



Low-cost construction



Quick to make and can be modified on the fly



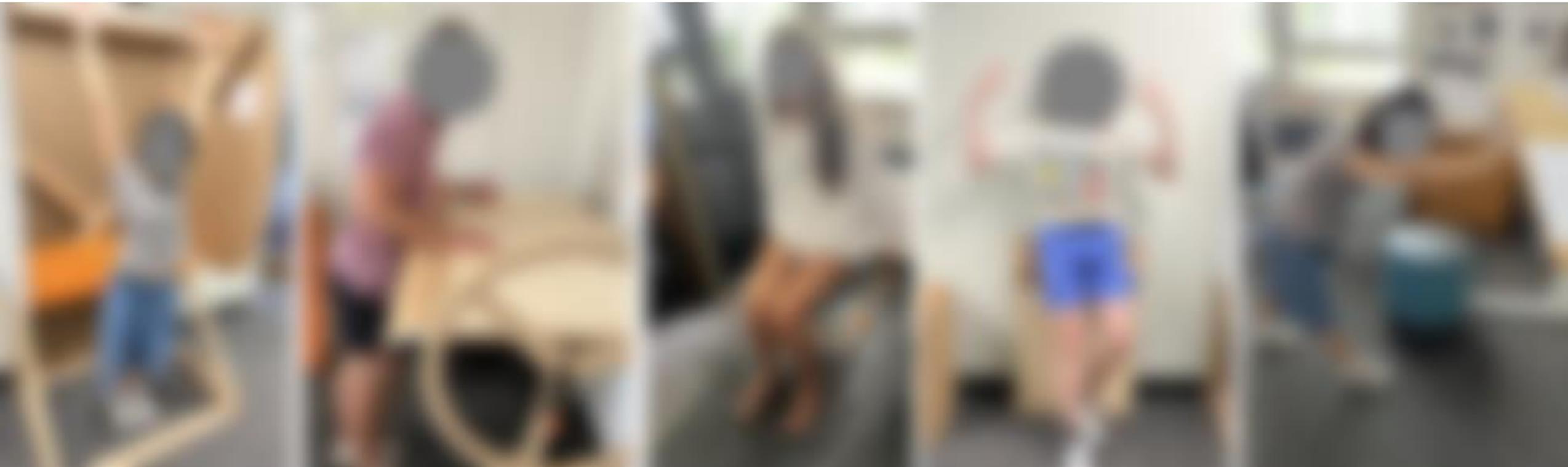
Detailed where needed

Focus Group Highlights

15 participants

12 students, 3 faculty

1.5 hour sessions



Focus Group Highlights 2

“

I worry about looking silly if others see me doing this

“

I don't want to follow QR codes- why can't I just read instructions

“

I am wondering how I could do this with friends

“

I need a place to put my stuff – I'd love to have a work surface

“

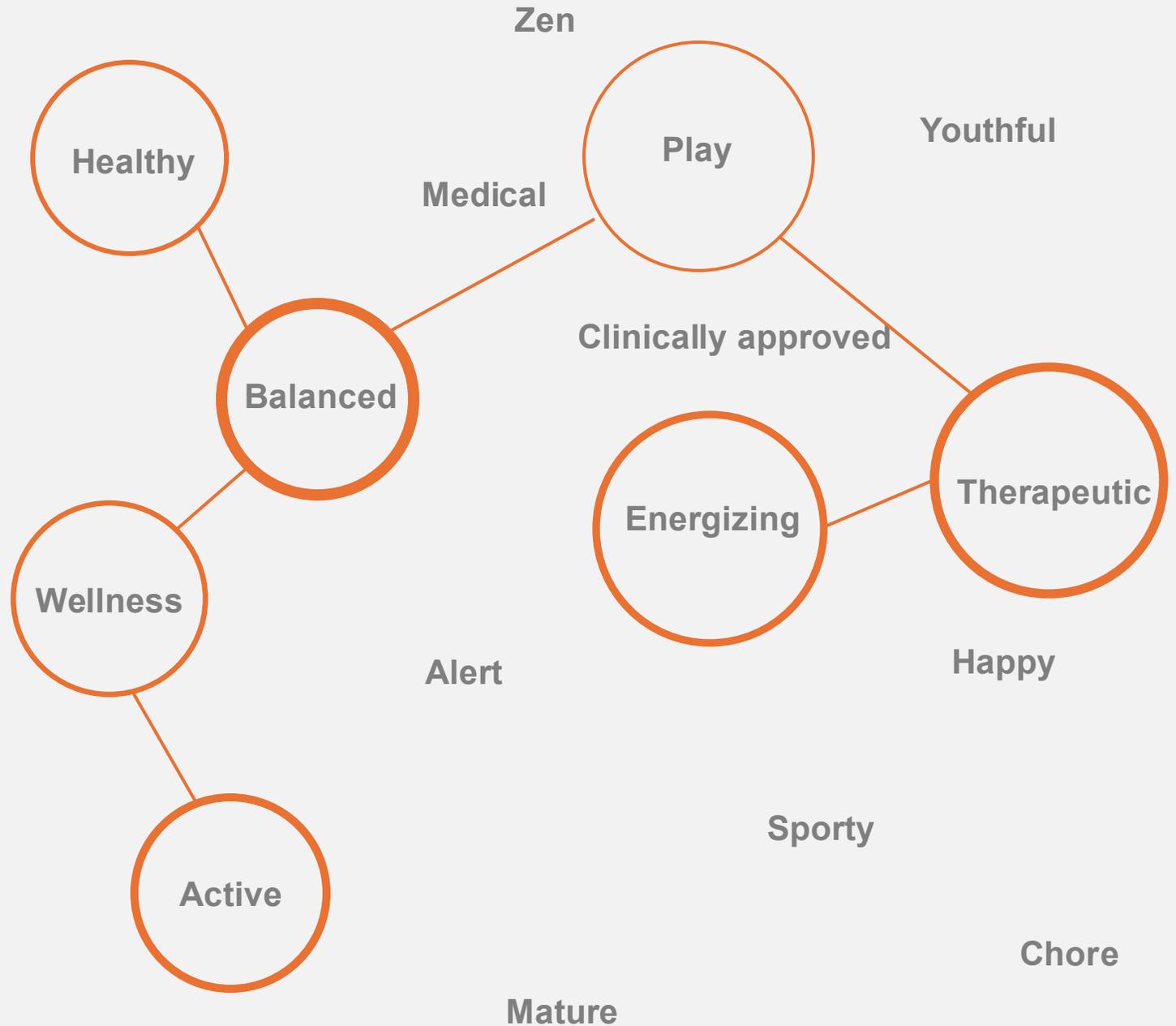
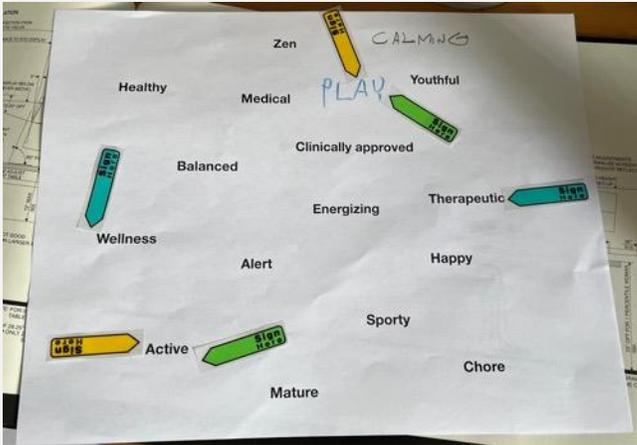
I like the feeling of privacy- that I can choose what I do...

“

I like to fiddle with the wheel- it gives my hands someplace to go

Benefit Mapping

Vitality benefit sort



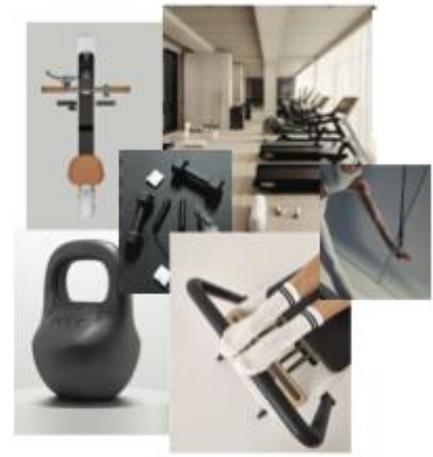
CMF Mapping

(Color, Material and Finish)



“
Soothing and inviting

“
Sporty



“
Energizing and comfortable

Focus group learning: Highlights



Sit, stand, Stretch

‘Vitality’ benefits are clear; how design features enable this result must be obvious: salient details, (colors, textures etc.) help bridge the gap.

Some Vitality training needed- preference for illustrations over digital methods: QR codes, apps and activity tracking

Discretion and privacy desired while stretching- increasing activity options desired and possible.

Need to accommodate ‘daily carry’- backpacks, water bottles and phones

Deeper emotional benefits, like refuge and calm and were also identified

Including some play and ‘fiddle factor’ desirable for soothing anxieties

Co-design Highlights

4 teams

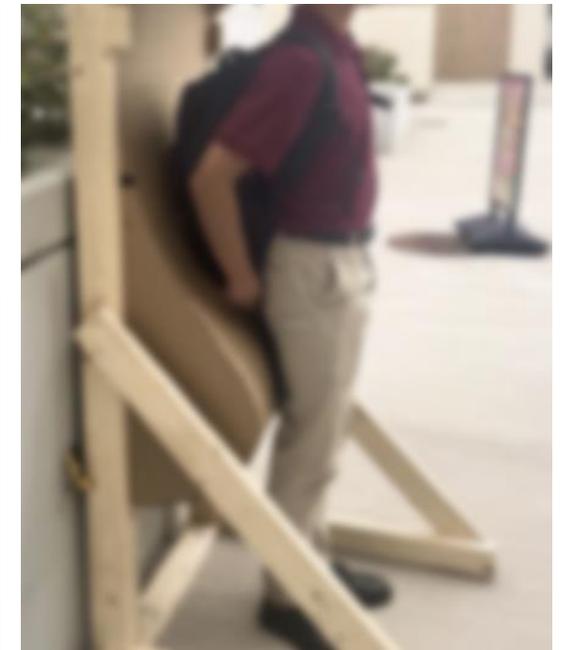
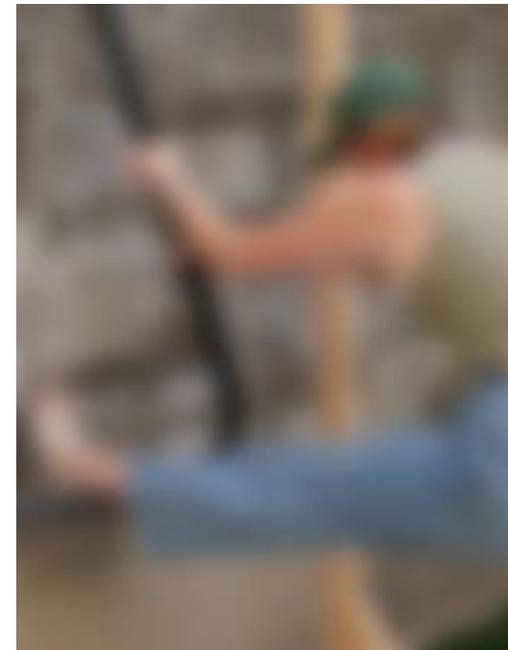
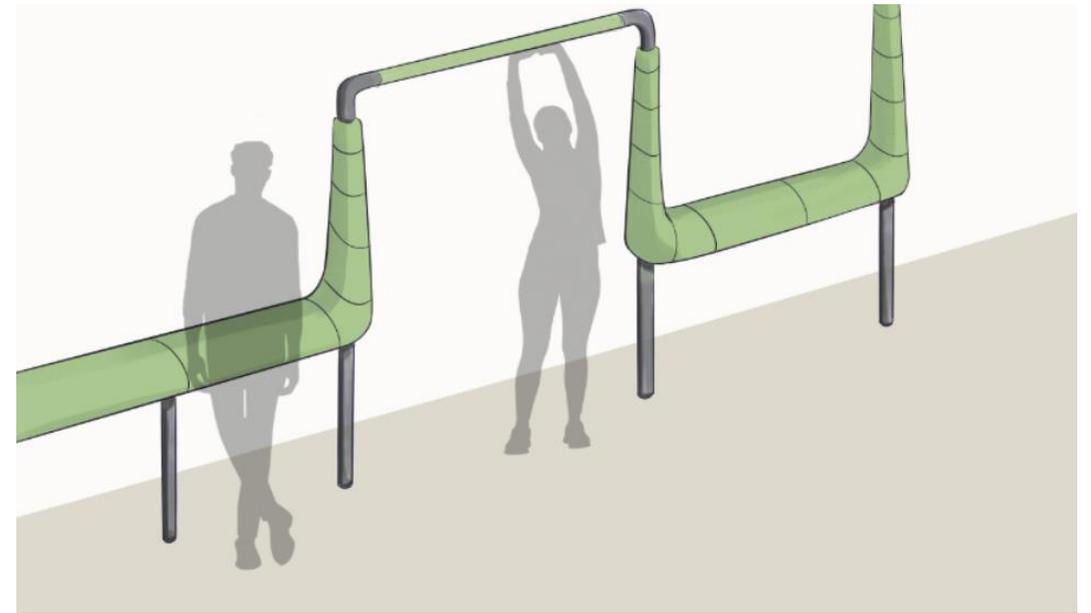
8 weeks

Informal peer feedback

Vitality solutions must accommodate 'backpack' ergonomics and water bottles

Additional leg stretch opportunities are desired

Students spend as much as 100 minutes a day waiting in between classes



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Key Takeaways 1:

- A significant **correlation exists between light physical activity and cognitive performance** in healthy college-aged adults (if not a causal link). Further research shows that stretching can play an important role beyond other forms of active postures like perching and standing.
- **College-aged students are naturally inclined to move, stretch and stand** during and in between class but are thwarted by sedentary environments, established social behaviors and learning environment norms.
- Providing secondary enticements to precipitate activity, such as **privacy**, may encourage active behavior.
- **Interstitial spaces** offer captive opportunities to integrate and encourage activity in learning environments. Since students are on the go, provide temporary storage for gear and accommodate students wearing backpacks.

Key Takeaways 2:

- **Some Vitality instruction needed**, not knowing what works best; simple analog diagrams are favored - many articulated distrust of data tracking and QR codes.
- Activity trackers help encourage active behaviors; how to extend these to low intensity activity in learning environments needs further research.
- Overall, **we conclude that ample opportunities exist to encourage light activity in learning environments to enhance cognitive performance.**



Questions

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Thank You!

Please scan the QR code to provide session feedback.

