

Warrior Performance Platform For Comprehensive Warrior Fitness

WP2 for United States Air Force:
Enabling Remote Fitness Coaching and
Wellness Tracking Capabilities for
Geographically Distributed Populations



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ABOUT THE TEAM



EXPERIENCE WITH OVER 30% OF ALL PRO SPORTS IN USA



DOD TEAMING PARTNER



TIAG brings a history of transformational leadership advancing military medical science and telehealth technology

- Holds CMMI Maturity Level 3 for Services, ISO 9001:2015, and ISO 27001 certifications.
- Delivers cutting-edge health IT solutions (e.g., VA's open-source EHR)
- Developed the Army's Research Management Enterprise System, providing autonomous big data management across numerous laboratories
- Legacy system data interoperability as part of MHS Genesis Cerner EMR implementation in DoD

SUCCESSFUL SBIR PHASE III TRANSITIONS



NAVY SBIR N171-079 – PHASE II

HUMAN PERFORMANCE SELF-SERVICE KIOSK AND APPLICATION

Operational Need and Improvement: The Navy seeks a software and hardware platform that displays and shares human performance and is supported by commercially available wearable devices to include phones, tablets and physical activity tracking devices.

Phase I and Phase II work period: JUN 2017 – NOV 2020
PHASE III TRANSITION APPROVED FOR 2021



USAF SBIR AF191-005 – PHASE II

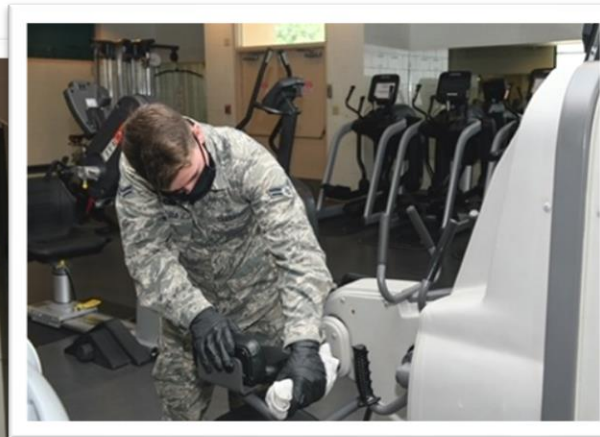
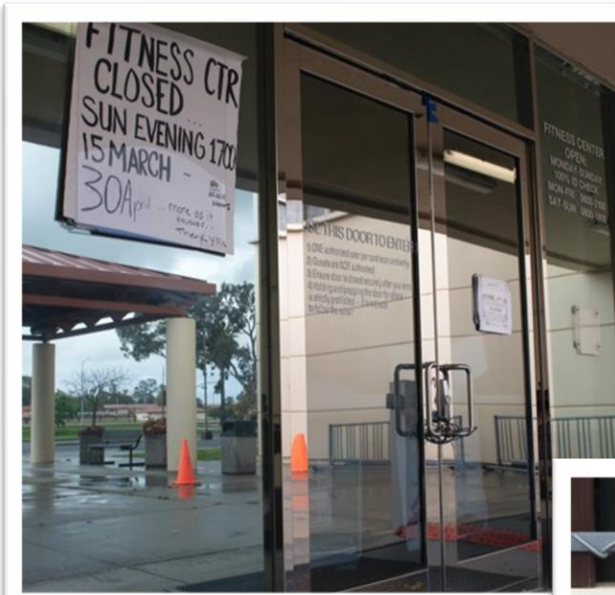
REMOTE FITNESS COACHING FOR AIRMEN

Operational Need and Improvement: Airmen in the reserve components (Air National Guard and Air Force Reserve) go through the same intensive training as their active duty counterparts.

Phase I and Phase II work period: MAR 2019 – NOV 2020
PHASE III TRANSITION APPROVED FOR 2021

COVID19 – LIMITS ACCESS TO FITNESS

PROBLEM



“Remote Work” has become the new normal due to the recent pandemic. With fitness centers closed across the DoD, it is more important than ever to provide Remote Fitness Training solutions.

“When testing resumes, the Air Force will take a systematic approach to reintegrating official physical fitness assessments. All policies and procedures should reinforce physical distancing, use of personal protective equipment, Airmen health and personal hygiene, and cleaning, sanitizing and disinfecting work spaces and common areas.”

Lt. Gen Brian Kelly

ENTERPRISE SOFTWARE

SOLUTION – CONFIGURABLE BASED ON NEED

HOLISTIC HUMAN PERFORMANCE PROFILE



MOBILE AND
TABLET
ACCESS



WORKOUT
BUILDER /
TRACKER



NUTRITION /
HYDRATION
TRACKING



WEARABLE
DEVICE
INTEGRATION



SUBJECTIVE
WELLNESS
TRACKING

PDFS,
NOTES,
VIDEOS

SCHEDULING,
MESSAGING,
NOTIFICATION

DATA IMPORT
AND EXPORT
API

FORCE MULTIPLIER

GENERAL POPULATION

10,000 – 500,000 Airmen

GOAL: Behavior Change / Education

Limited Staff – High Automation

AT-RISK POPULATION

1,000 - 10,000+ Airmen

GOAL: Monitoring / Tracking

Blended Staff – High Automation

SPECIALIZED POPULATION

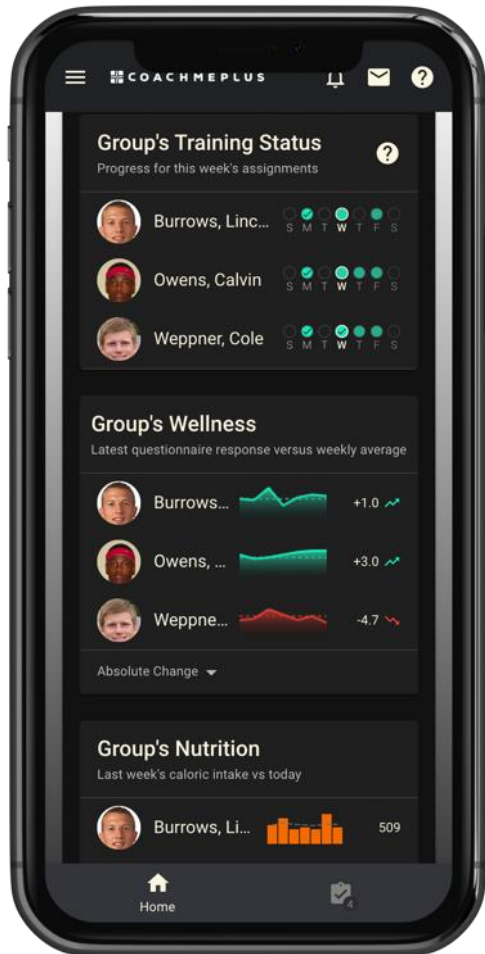
20 - 2,000 Airmen

GOAL: Optimized Performance

Embedded High Performance Staff

MOBILE APP EXPERIENCE

COACH AND ATHLETE APP EXPERIENCE



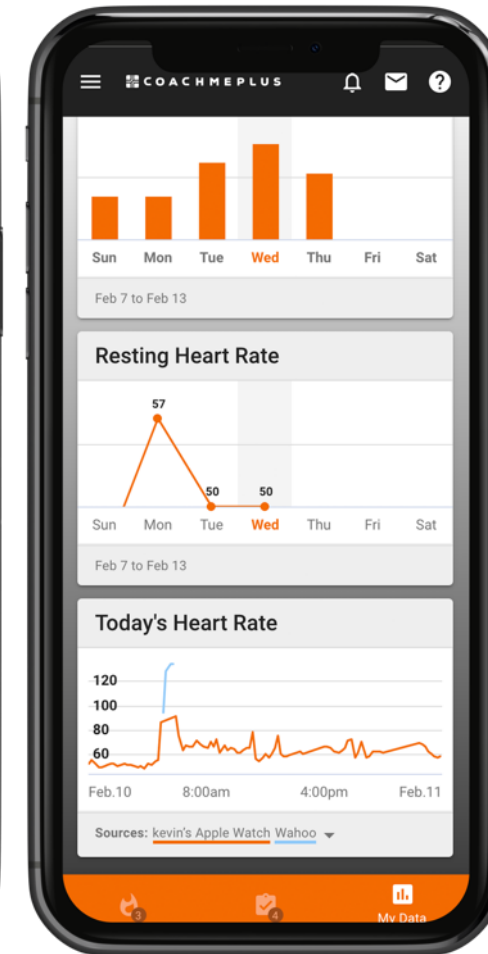
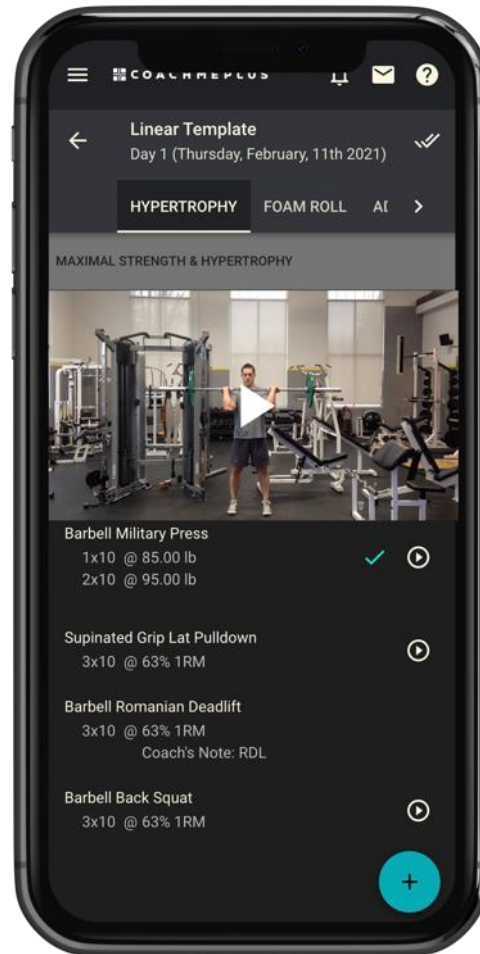
COACH APP

Coaching Toolkit, Create Workouts, Wellness Questionnaires, Testing, Communication.



ATHLETE APP

Workouts, Nutrition, Hydration, Wellness, Wearables Integration, Testing, Communication.

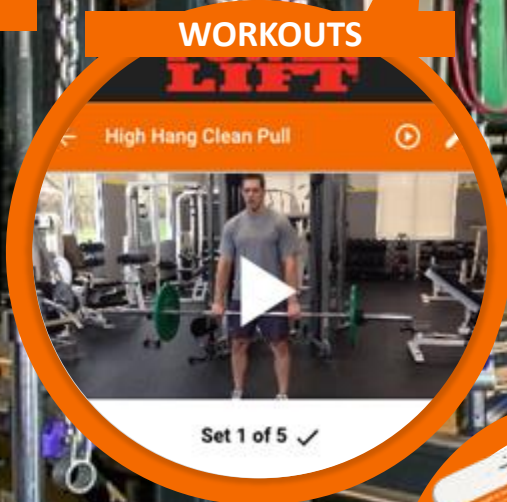


INTRODUCE COMPETITIVE ACTIVITY

RE-ENGAGE WHEN ATHLETES ARE IN FACILITIES



DASHBOARDS



WORKOUTS



PHONE APP

RANK	ATHLETE	BACK
1	#13 Pace, Charlie	425lb
2	#94 Owens, Calvin	400lb
	#27 Weppner, Cole	375lb

LEADERBOARDS



INTEGRATION



LIVE ASSESSMENTS

OPERATIONAL NEED & IMPROVEMENT

DELAYED ENTRY PROGRAM



PREPARE FOR
USAF RECRUIT
TRAINING

USAF RECRUIT TRAINING



ACHIEVE FITNESS
BASELINE

FULL-CAREER USAF



MAINTAIN FITNESS
BASELINE

PHYSICAL THERAPY



RETURN TO
FITNESS BASELINE

SPECIALIZED REQUIREMENTS



MAINTAIN
SPECIALIZED
FITNESS BASELINE

GUARD/RESERVE



REMOTE FITNESS
and MONITORING;
MAINTAIN
BASELINE

USAF CIVILIAN TRANSITION



RETURN HEALTHY
AIRMAN to CIVILIAN
LIFE



TECHNOLOGY AS A FORCE MULTIPLIER

An enterprise platform that works under multiple operational conditions

GENERAL POPULATION

GOAL: Behavior Change / Education

AUTOMATION / LIMITED STAFF

Nutrition / Hydration / Workouts

AT-RISK POPULATION

GOAL: Remediation / Return to Duty

SEMI-AUTOMATION / SPECIALIZED STAFF

Sleep / Pain / Mood / Stress / Fatigue

SPECIALIZED POPULATION

GOAL: Optimized Performance

CUSTOMIZATION / SPECIALIZED STAFF

Load Monitoring / Tech Based Training

TRACKING - KEEPING IT SIMPLE

LOW-COST MEASURES OF EFFECTIVENESS – IMPROVE ROI

STUDY AFTER STUDY SUPPORTS THE IDEA THAT FITNESS EDUCATION AND MONITORING IMPROVES FITNESS RESULTS.

WORKOUTS

75% of users who track workouts are more active than those who do not. Increasing fitness metrics increases the likelihood of passing physical training testing. Body Mass Index measurements of those who track workouts are 6.5% lower than those that do not.

SUBJECTIVE SLEEP

Subjective reporting of sleep hours and quality can alert to potential sleep issues: **poor quality or less than 8 hours average sleep showed a risk increase of 44% of MSKI.** Self-reporting shows that 13% self-testing athletes require consultation with a sleep consultant.

PERCEIVED EXERTION

Participants subjectively report exertion during a training session. Creating a training stress balance value can indicate periods of overtraining. **Injury risk increases 3-4 times when training stress balance exceeds 200%** compared with 50-99%.

SUBJECTIVE SORENESS AND STRESS

Neuromuscular and subjective fatigue measures deteriorate 24 hours following extreme physical activity; modification of subsequent physical training targets the goal of lowering training intensity during periods of increased risk which reduces incidents of injury.

HYDRATION

Users tracked pre-workout and post-workout body-weight measurements to indicate dehydrated values: **2% loss of body weight can cause 10% performance drop, 5% of body weight loss can cause a 30% decline in work capacity.** Increased compliance of fluid replacement can sustain performance levels, increasing recovery and reducing risk of injury.

SUBJECTIVE PAIN

Subjective reporting of increased pain associated with previous injury areas can alert to potential risk. **Individuals with two or more previously reported injuries had a 300% greater risk of recurrence of injury.** Improved reporting reduces injury risk per session.

SBIR AF191-005: REMOTE FITNESS COACHING FOR AIRMEN



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- As part of the Phase II SBIR, WP2 was piloted at various USAF sites to gauge platform effectiveness and perform a gap analysis between the as-is platform capability and the ideal end state for USAF's specific needs.
- Focus on two distinct use-cases: Practitioner-Driven vs Project HeRO/Population Health
- Study outlined how the WP2 technology satisfies DoD needs "out of the box," with additional capabilities available to further enhance USAF operations.
- Just as in professional sports, we found that no two locations had the same operational environment.
- Pilot activities were launched directly into the headwinds of COVID-19.
- While each USAF pilot site had a different set of challenges and objectives, we discovered we could leverage common strategies while solving each site's unique requirements.

PRACTITIONER-DRIVEN USE CASE

ELLINGTON JOINT RESERVE BASE
FAIRCHILD AIR FORCE BASE
HANCOCK FIELD AIR NATIONAL GUARD BASE
JOINT BASE ELMENDORF RICHARDSON

PATRICK AIR FORCE BASE – USAF RESERVE
SEYMOUR-JOHNSON AIR FORCE BASE
WHEELER ARMY AIRFIELD

PROJECT HERO USE CASE

EGLIN AIR FORCE BASE
MACDILL AIR FORCE BASE
OSAN AIR BASE (OCONUS)

MISSION NEED

PROJECT HeRO & AIR FORCE HEALTH PROMOTION

PROMOTE HEALTH

Capability-based concept of operations adopted where a HP team (dietitian and HPC) was established to go into squadrons and embed HPP into Air Force culture.

ASSESS, ENGAGE, INTERVENTION

Target at-risk squadrons using data and evidence-based interventions to minimize work-days lost to preventable illness or injury.

BEHAVIOR CHANGE

Annual personal health assessment questionnaires so our teams can identify squadrons showing high rates of negative health behaviors.



MISSION NEED

TACP NATIONAL GUARD AND RESERVE

HUMAN PERFORMANCE

Required to meet the same fitness standards as their active duty counterparts, while only being required to train two days per month.

HEALTH AND FITNESS

10-15% physical fitness standard failure rate with a significant percentage at risk of failure.

REDUCING INJURY RISK

It costs well over \$100,000 to develop and train an Airmen through his/her career.



RELEVANT PILOT RESULTS

EGLIN AFB

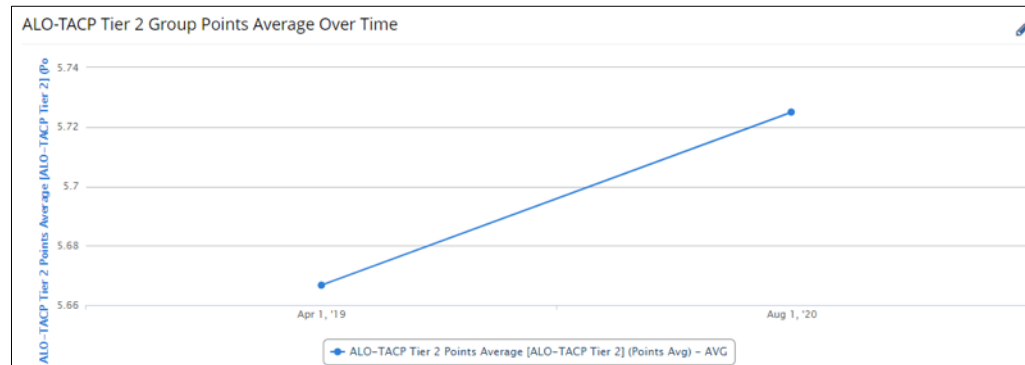
Test	Month	Score	Findings
Recovery	February Average	3.18	Recovery scores have significantly improved over pilot duration.
	June Average	3.94	
	Pilot % Change	24%	
Sleep	February Average	3.31	Sleep scores have significantly improved over pilot duration..
	June Average	4.00	
	Pilot % Change	21%	
Mood	February Average	3.69	Mood scores are stable over pilot duration.
	June Average	3.88	
	Pilot % Change	5%	
Energy	February Average	3.59	Energy scores are stable over pilot duration.
	June Average	3.88	
	Pilot % Change	8%	
Pain	February Average	3.06	Pain scores have significantly improved over pilot duration.
	June Average	3.88	
	Pilot % Change	27%	

SEYMOUR-JOHNSON AFB

Test	Month	Score	Findings
Recovery	December Average	3.59	Recovery scores are stable over pilot duration.
	June Average	3.76	
	Pilot % Change	5%	
Sleep	December Average	3.75	Sleep scores are stable over pilot duration.
	June Average	3.91	
	Pilot % Change	4%	
Mood	December Average	3.82	Mood scores are stable over pilot duration.
	June Average	4.00	
	Pilot % Change	3%	
Energy	December Average	3.64	Energy scores are stable over pilot duration.
	June Average	3.80	
	Pilot % Change	4%	
Pain	December Average	3.70	Pain scores are stable over pilot duration.
	June Average	3.41	
	Pilot % Change	-8%	

HANCOCK FIELD

Test	Month	Score	Findings
Recovery	January Average	3.57	Recovery scores are stable over pilot duration.
	July Average	3.36	
	Pilot % Change	-6%	
Sleep	January Average	3.56	Sleep scores are stable over pilot duration.
	July Average	3.50	
	Pilot % Change	-2%	
Mood	January Average	3.89	Mood scores are stable over pilot duration.
	July Average	3.81	
	Pilot % Change	-2%	
Energy	January Average	3.64	Energy scores are stable over pilot duration.
	July Average	3.76	
	Pilot % Change	3%	
Pain	January Average	3.41	Pain scores are stable over pilot duration.
	July Average	3.19	
	Pilot % Change	-6%	

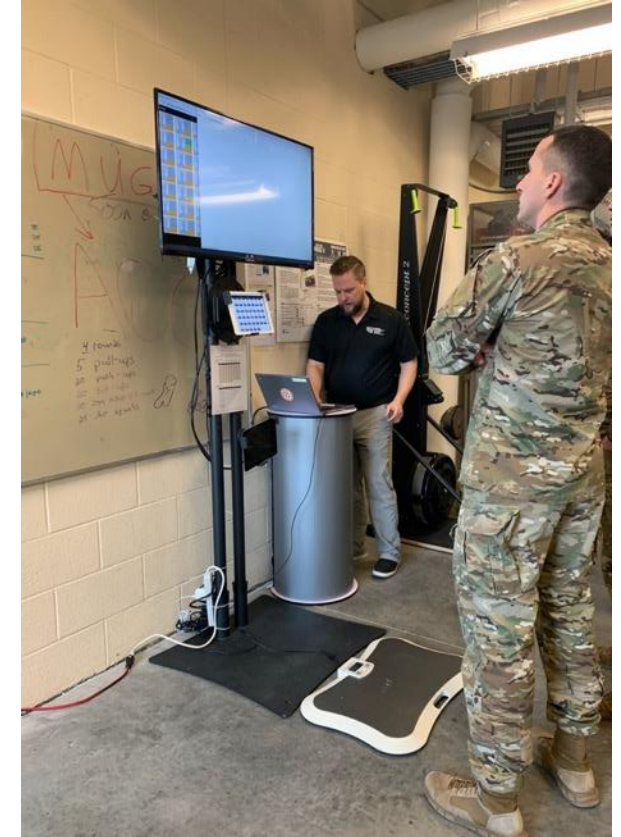


April 2019 vs August 2020
ALO-TACP Tier 2 testing scores for
Airmen at Hancock Field ANGB

ANECDOTAL PILOT FINDINGS

Throughout the pilot, the WP2 team collected powerful anecdotes regarding the applicability of the platform to the USAF community. We consistently observed the following:

- Airmen are interested in the idea of improved mobile fitness resources.
- Airmen are already equipped to access and make beneficial use of WP2.
 - Ubiquitous access to smart phones
 - Many users have already invested in personal wearables
- Airmen and leadership alike benefit from standardized reporting.
- TACP Airmen are high-end athletes interested in the upper echelons of fitness.
- Airmen want access to improved nutrition tools.
- Airmen already invested in commercial fitness apps can/should continue to use those apps, integrate data.
- Remote fitness tools make it easier for National Guard units to share human performance professionals.

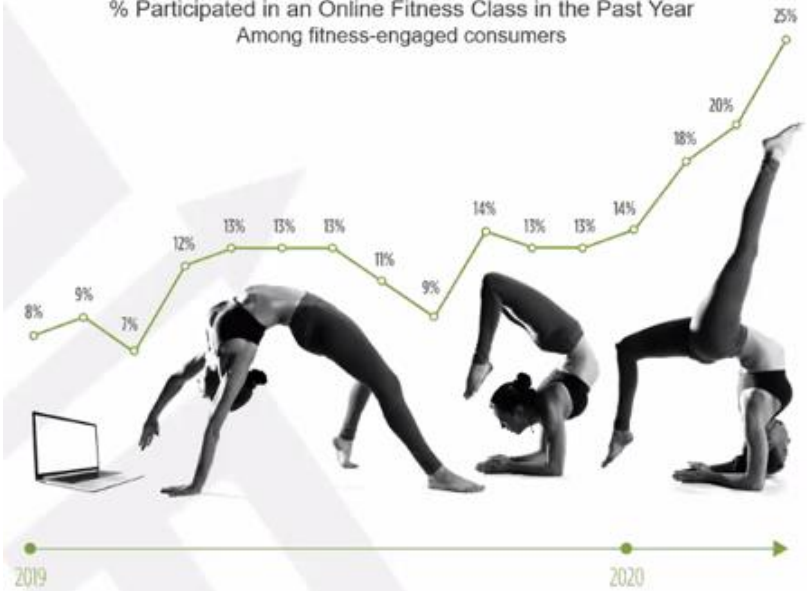


**CONNECTED BLUETOOTH SCALE
AND MONITOR
(HANCOCK AIR NATIONAL GUARD TACP)**

REMOTE AND ON DEMAND FITNESS 2020 INDUSTRY TRENDS

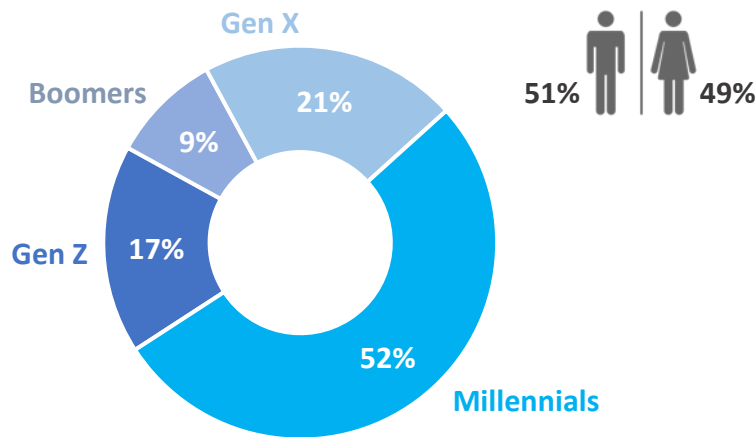
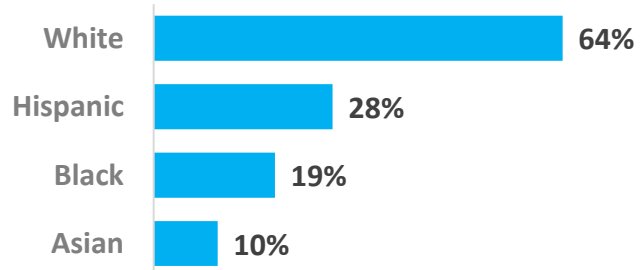
Participates in Online Fitness Classes

% Participated in an Online Fitness Class in the Past Year
Among fitness-engaged consumers



1 in 4 Adults

Use online fitness services more than once a month



USER'S MOTIVATION TO MOVE ONLINE SINCE COVID-19

- 29%** Wanted to maintain fitness levels
- 28%** Wanted convenience
- 24%** Gym or studio closed

VIDEOS AND CASE STUDIES

Pro Sports – Buffalo Bills
https://youtu.be/GB_iWcWswmA



Military – H2F US Army
<https://youtu.be/KoK8LtfoOUw>



Small College – Niagara
<https://youtu.be/DMUiXSVkNYc>



Military – US Air Force
https://youtu.be/uu2IIIu7_y0



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