

# **Marine Corps Force Integration Plan Line of Effort 2**



## **Research Assessment & Findings Report**

**August 2015**

**Training and Education Command**



# Agenda

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- Research Effort
- Data Summaries
  - Infantry Training Battalion
  - Combat Arms Formal Learning Centers
  - Infantry Officers Course
- Female and Male Marines Comparative Analysis
  - Performance
  - Injuries
- Key Findings



# Research Effort

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- Data Sets Collection
  - Propensity survey data from 900+ LOE 2/LOE 3 females
  - Performance data from 660+ LOE 2/LOE 3 females
  - Performance data from 6800+ males available for analysis
- Comparative analysis of performance/injuries, statistical distributions, and combined multivariate linear regressions to:
  - Identify significant performance indicators at FLCs
  - Identify significant injury occurrences rates at FLCs



# Data Summary: ITB

Propensity	Performance	Injuries
<p>3614 cumulative female MCRD grads (Sep 13-Jun 15)</p> <p>42% (1504 of 3614) female MCRD grads met physical prerequisite to volunteer</p> <p>34% (516 of 1357) cumulative volunteers at MCRD</p> <p>78% (401 of 516) MCRD (ITB) volunteers</p>	<p>35.9% <u>female</u> grad rate - 144 grads</p> <p>17% (25 of 144) <u>female</u> graduates were recycles</p> <ul style="list-style-type: none"> <li>▪50% 0311 / 42% 0331 graduation rates</li> <li>▪61% 0341 / 56% 0351 graduation rates</li> <li>▪57% 0352 graduation rate</li> </ul> <p>64% attrition rate (257 of 401 training starts)</p> <p>48% (124 of 257) physical performance drops</p> <ul style="list-style-type: none"> <li>▪52 PFT/CFT failures /58 Hike failures</li> <li>▪14 weight failures</li> </ul> <p>35% (89 of 257) DORs</p> <p>6% (15 of 257) Weapons performance failures</p> <p>2% (6 of 257) Academic failures</p>	<p>13% <u>females</u> (n=61)</p> <ul style="list-style-type: none"> <li>-25 light duty only</li> <li>-36 recycled</li> <li>-9% (23 of 257) drops due to injury</li> </ul> <p>2% <u>males</u> (n=131)</p> <ul style="list-style-type: none"> <li>-43 light duty only</li> <li>-88 injury recycles</li> <li>-6 injuries = drops</li> </ul>
<p><u>Reasons for Volunteering:</u></p> <ul style="list-style-type: none"> <li>▪ 78% Training with the infantry</li> <li>▪ 76% Historic participation</li> <li>▪ 54% Believe women should be allowed in the infantry</li> </ul> <p><u>Reasons for NOT Volunteering:</u></p> <ul style="list-style-type: none"> <li>▪ 50% Risk of injury</li> <li>▪ 36% Delay PMOS school</li> <li>▪ 23% Want PRASP</li> </ul>	<p><u>Female</u> final PFT avg (194) / final CFT avg (254)</p> <p><u>Male</u> final PFT avg (244) / final CFT avg (279)</p> <hr/> <p>95% <u>male</u> grad rate (5220 of 5503 training starts)</p> <p>- 99% grad rate for males with one recycle</p> <ul style="list-style-type: none"> <li>▪100% 0311 graduation rate</li> <li>▪94% 0331 / 93% 0341 graduation rates</li> <li>▪98% 0351 / 98% 0352 graduation rates</li> </ul>	<p>27% of <u>female</u> injuries are attributed to the 15K and 20K hikes</p> <p>-28% of all hike-related injuries result in a course drop</p> <p>13% of <u>male</u> injuries are attributed to the 15K and 20K hikes</p> <p>-41% of all hike related Injuries are reclassified or attrited</p>



# Data Summary: Combat Arm FLCs

Propensity	Performance		Injuries
<p>61 total females eligible to volunteer from 4 solicited MCT companies</p> <p>28 (46% of 61) cumulative volunteers started training at the CA FLCs</p> <ul style="list-style-type: none"> <li>▪ 1812: 11% (7 of 61) of volunteers were training starts</li> <li>▪ 0811: 23% (14 of 61) of volunteers were training starts</li> <li>▪ 1833: 11% (7 of 61) of volunteers were training starts</li> </ul>	<p>0811: 86% (12 of 14) <u>female</u> grad rate            - 86% (226 of 263) <u>male</u> grad rate            1812: 57% (4 of 7) <u>female</u> grad rate            -99% (67 of 68) <u>male</u> grad rate            1833: 71% (5 of 7) <u>female</u> grad rate            -94% (106 of 113) <u>male</u> grad rate</p> <hr/> <p>The handling &amp; loading of artillery &amp; tank ordnance req'd remediation for the majority of volunteers</p> <p>1812: Tank ordnance task:</p> <ul style="list-style-type: none"> <li>▪ 25% (1 of 4) female pass</li> <li>▪ 62% (18 of 29) male pass</li> </ul> <p>0811: Projectile Lift &amp; Load</p> <ul style="list-style-type: none"> <li>▪ Lift: 14% (2 of 14) female pass</li> <li>▪ Lift: 73% (146 of 199) male pass</li> <li>▪ Load: 7% (1 of 14) female pass</li> <li>▪ Load 69% (138 of 199) male pass</li> </ul>	<p>1833: No female failures due to physical performance</p> <hr/> <p>The majority of drops for the CA FLCs were due to academic performance failures</p> <ul style="list-style-type: none"> <li>▪ 2 Academic failures</li> <li>▪ 1 DOR vice recycle for academic failure</li> <li>▪ 3 DORs</li> <li>▪ 1 Legal/ADSEP</li> </ul>	<p>No CA FLC volunteers were recycled or dropped due to injuries</p>



# Data Summary: IOC

Propensity	Performance	Injuries
<p>454 cumulative BOC Lts with opportunity to volunteer (18 BOCs from May 12-Apr 15)</p> <p>29 female IOC training starts</p> <ul style="list-style-type: none"> <li>▪ 24 (5% of 454) BOC graduates</li> <li>▪ 3 OPFOR Captains</li> <li>▪ 2 female 0203 Lts</li> </ul> <p><u>Reasons for volunteering:</u></p> <ul style="list-style-type: none"> <li>▪ 56% - Chance to conduct infantry training</li> <li>▪ 39% - Believe women should be allowed in the infantry</li> <li>▪ 33% - Support the research</li> </ul> <p><u>Reasons for NOT volunteering:</u></p> <ul style="list-style-type: none"> <li>▪ 26% - risk of injury</li> <li>▪ 21% - Delay PMOS school</li> <li>▪ 14% - No 0302 MOS</li> </ul> <p><u>Exit Survey Key Point:</u></p> <ul style="list-style-type: none"> <li>▪ 55% - cited lack of strength/endurance attributed to disenrollment</li> </ul>	<p>100% attrition rate - No <u>female</u> grads</p> <p>17% (5 of 29) females completed the CET on TD-1</p> <p>81% (22 of 27) females failed the CET</p> <p>100% attrition rate with 29 cumulative drops from study</p> <p>15% (4 of 27) physical performance failures (2x hike drops)</p> <ul style="list-style-type: none"> <li>▪ 2 OPFOR</li> <li>▪ 1 BOC Lt</li> <li>▪ 1 0203 Lt</li> </ul> <hr/> <p>913 cumulative <u>male</u> IOC starts (FY13/15)</p> <p>15% (138 of 913) male performance drops (CET failures, hike and academic drops)</p> <p>11% (101 of 913) male recycles</p> <ul style="list-style-type: none"> <li>▪ 14% (125 of 913) male DORs</li> </ul> <p>71% (692 of 978) average (FY13-15) <u>male</u> graduation rate</p>	<p>3% (1 of 29) of <u>female</u> injury drop</p> <p>2.6% (24 of 913) <u>male</u> injury drops</p>



# Graduation Rates Summary

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## **ITB (0311/03xx)**

- 401 female training starts – 144 graduates (36%)
- 5503 male training starts – 5220 graduates (95%)

## **Combat Arms FLCs**

- 0811: 14 female training starts – 12 graduates (86%)  
263 male training starts – 226 graduates (86%)
- 1812: 7 female training starts – 5 graduates (57%)  
68 male training starts – 67 graduates (99%)
- 1833: 7 female training starts – 5 graduates (71%)  
113 male training starts – 106 graduates (94%)

## **Infantry Officer Course (0302):**

- 29 female training starts – No graduates
- 978 male officer training starts – 692 graduates (71%)



# Key Findings

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## Propensity

- 42% (1504 of 3614) of MCRD females met the ITB physical prerequisites (3<sup>rd</sup> Class Male PFT/CFT)
- 34% (516 of 1504) of eligible females volunteered for ITB
- Only 5% (24 of 454) of BOC females elected to volunteer for IOC

## Performance

- 48% (124 of 257) of ITB females were physical performance drops
- Height & Weight were significant predictors for 03xx graduation
- 97% (28 of 29) of IOC females were physical performance drops

## Injuries

- ITB females had a 13% injury rate versus a 2% male injury rate
- 27% of ITB female injuries were attributed to marching under load
- 28% of the hike-related injuries resulting in a course drop





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# Backups



# Volunteer Requirements: Final Status

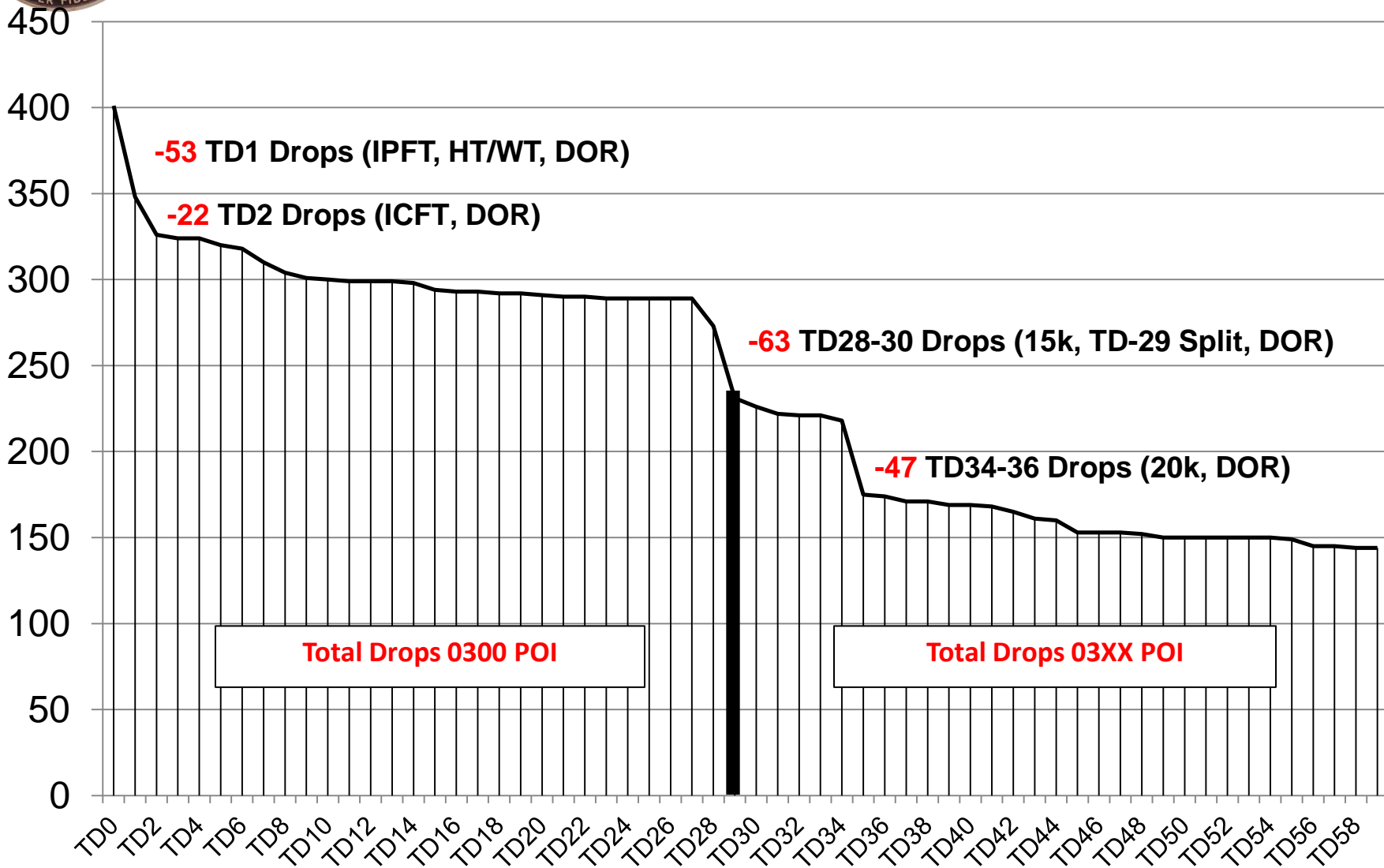
Course	Research Requirement	LOE 2 Volunteers (V)	LOE 2 Graduates (G)	LOE 3 Volunteers & Graduates		Remaining Requirements (LOE 2)	Confidence Level (+/- 5% Margin of Error)
				(V)**	(G)		
ITB		401	144	61	33	NA	
0311	251	307*	95	5	5	0	95%*
0331	50	38	15	14	10	0	95%
0341	51	31	19	10	10	10	74%
0351	25	14	8	4	4	7	54%
0352	27	11	7	6	4	10	47%
1812	13	6	4	8	5	0	95%
1833	29	7	5	15	13	7	60%
0811	33	14	12	18	17	1	90%
IOC	92	27	0	NA		66	44%

\* Number of volunteers includes those who began, but did not complete the 0300 POI

\*\* Not all 61 initial volunteers began an 03XX POI

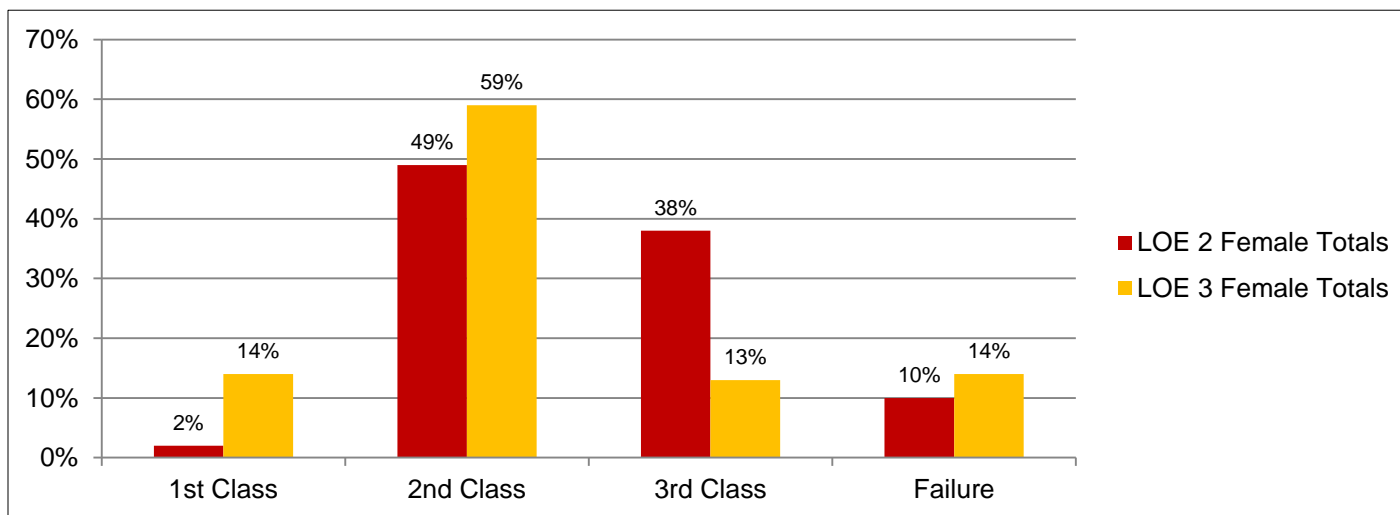
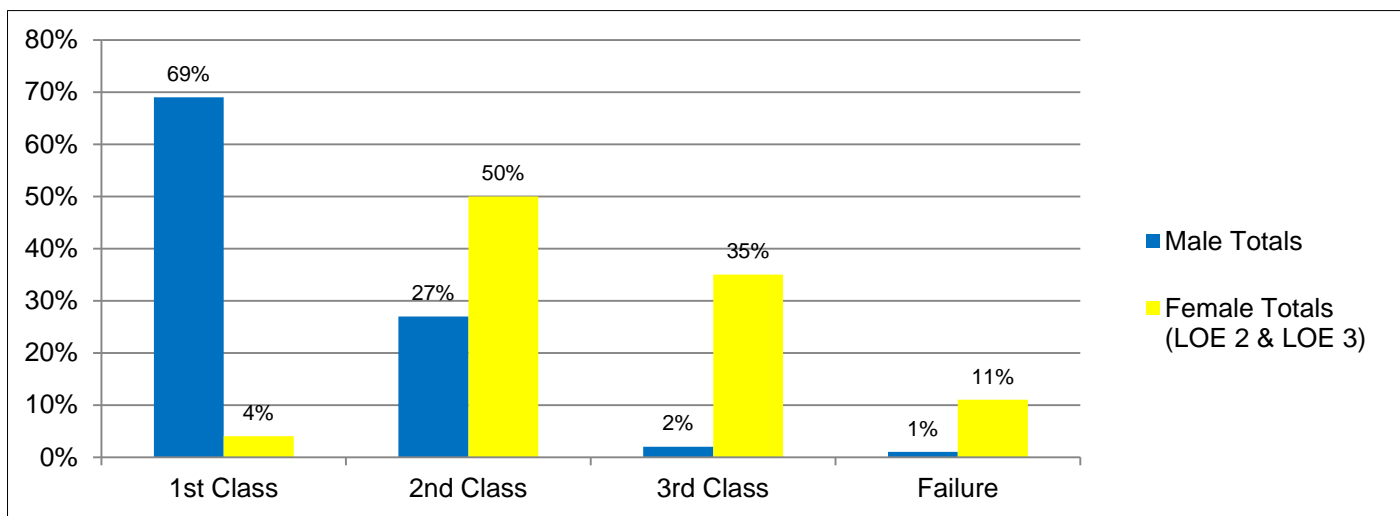


# ITB Data Summary: Drops by Training Day



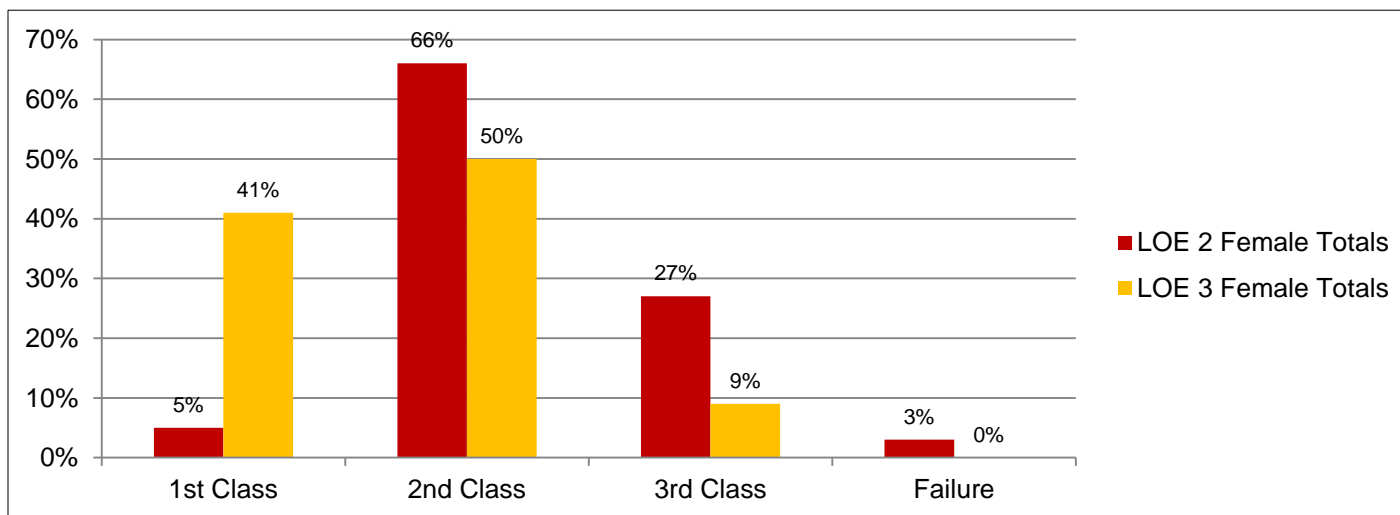
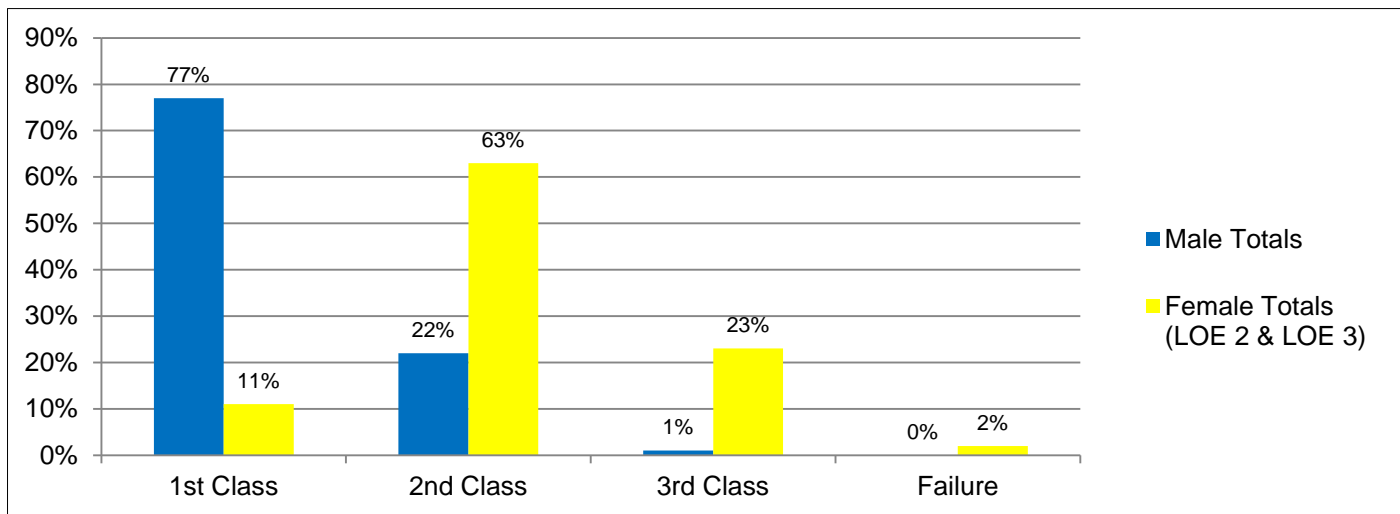


# ITB Comparative Data: Initial PFT



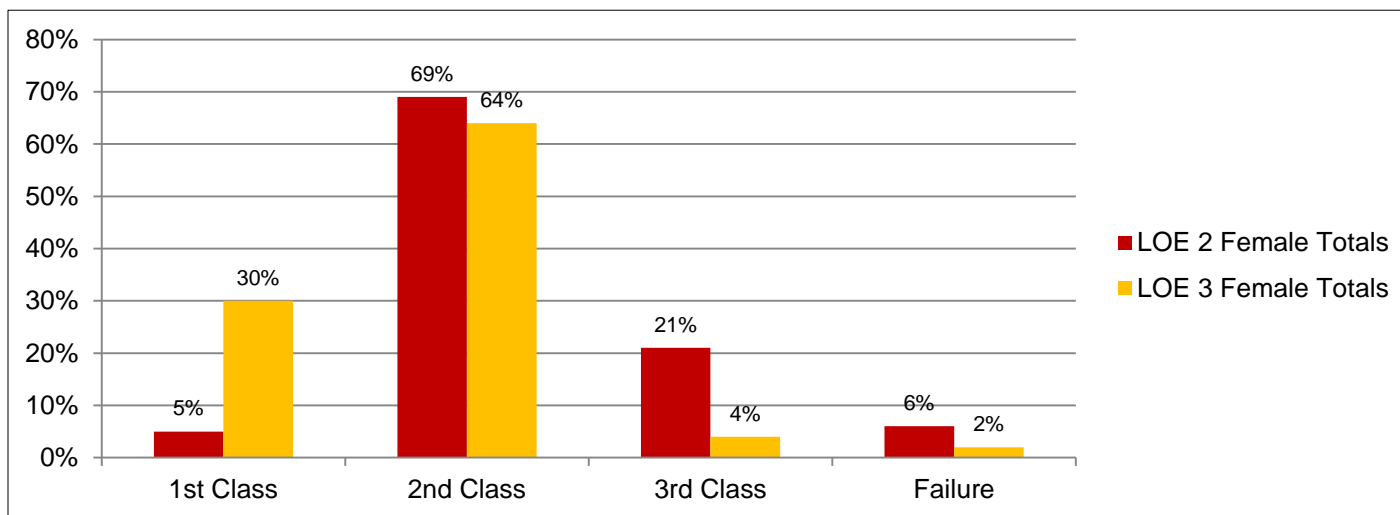
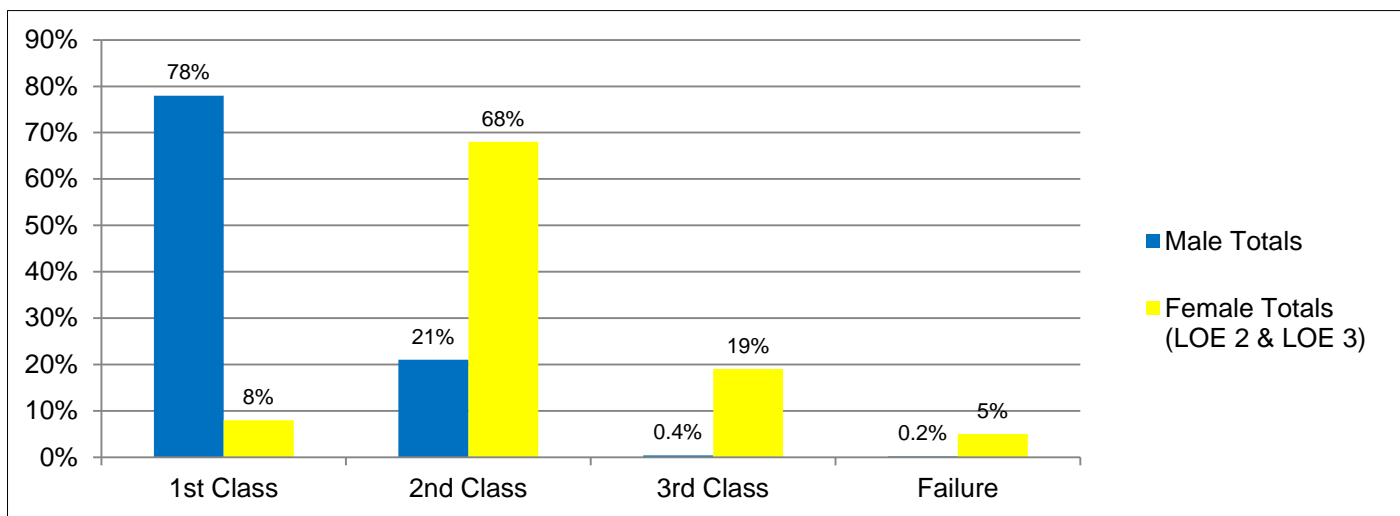


# ITB Comparative Data: Final PFT



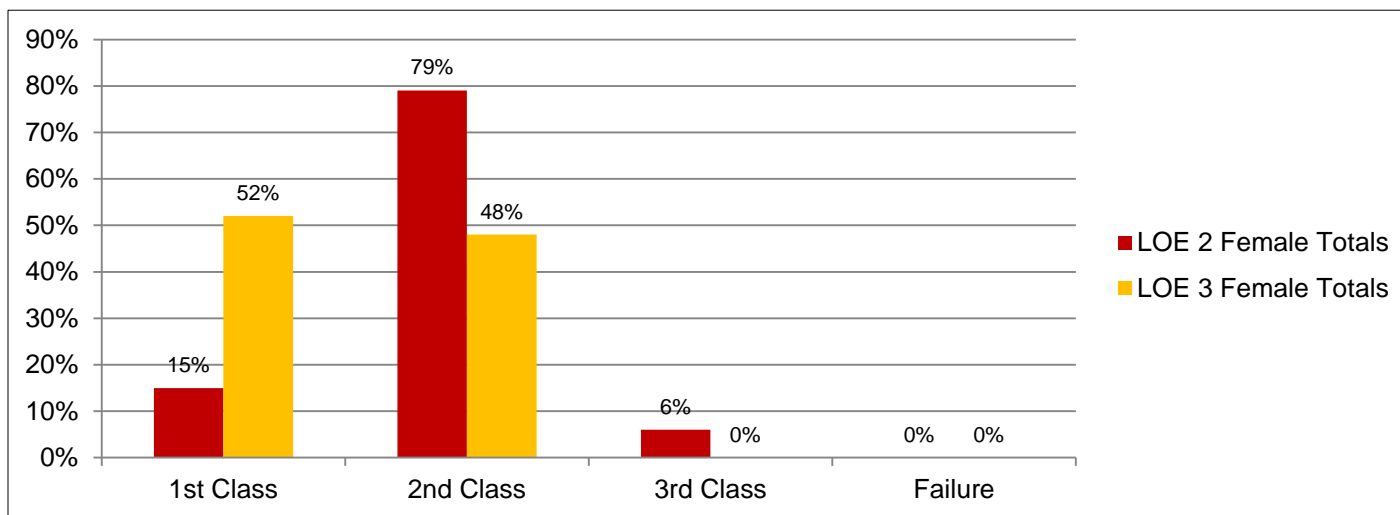
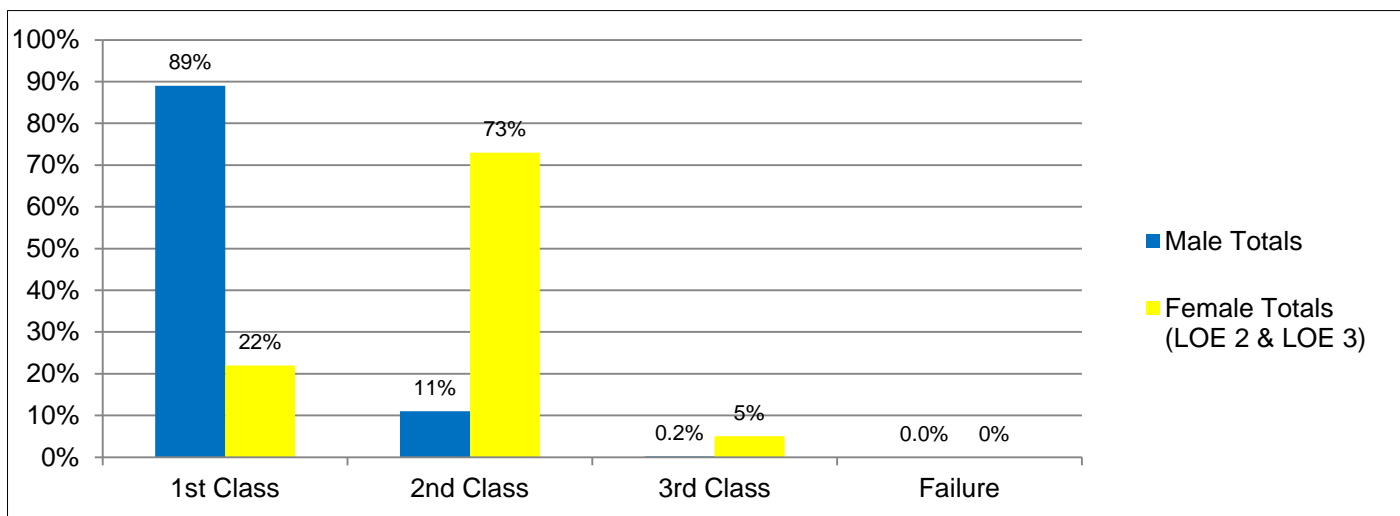


# ITB Comparative Data: Initial CFT



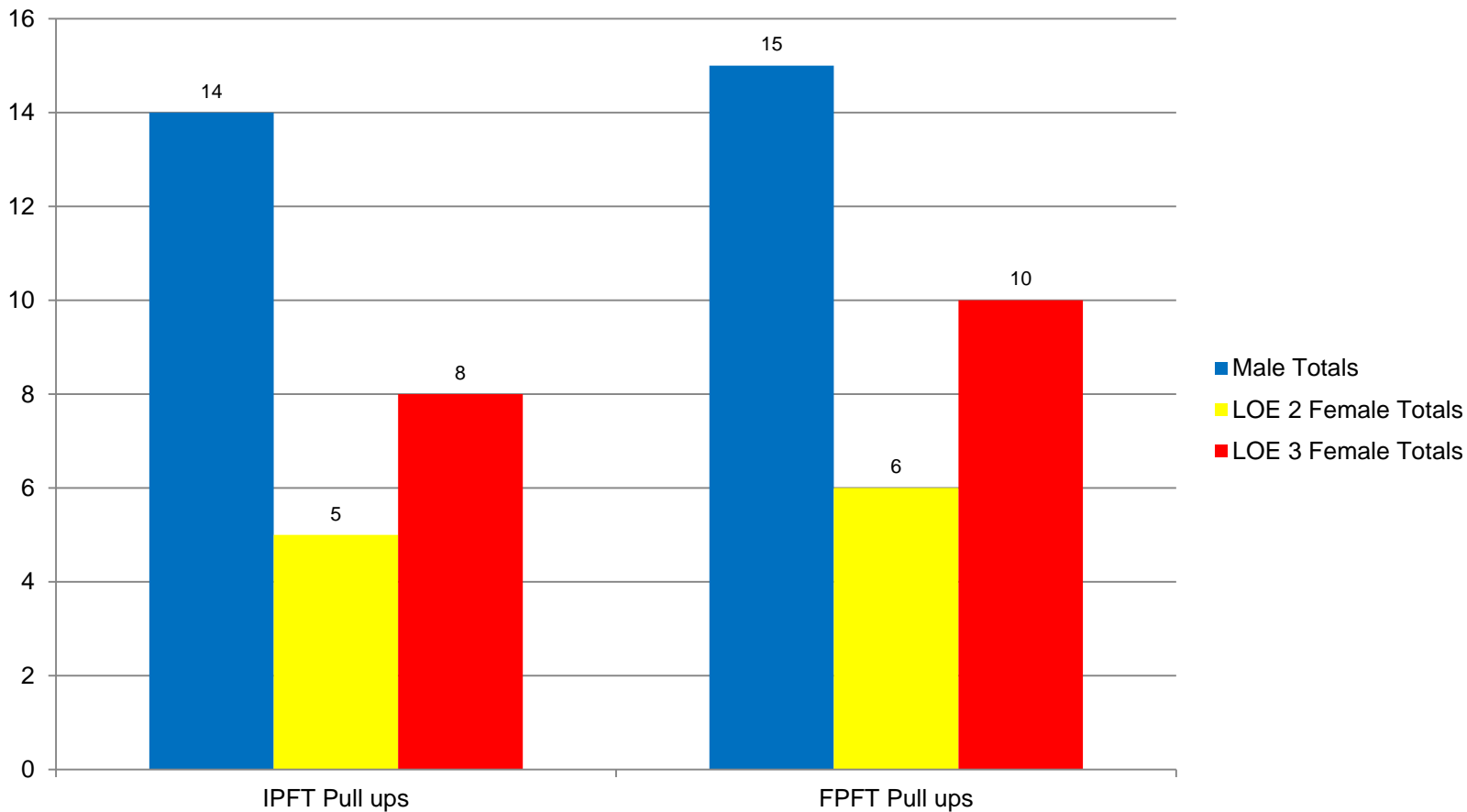


# ITB Comparative Data: Final CFT





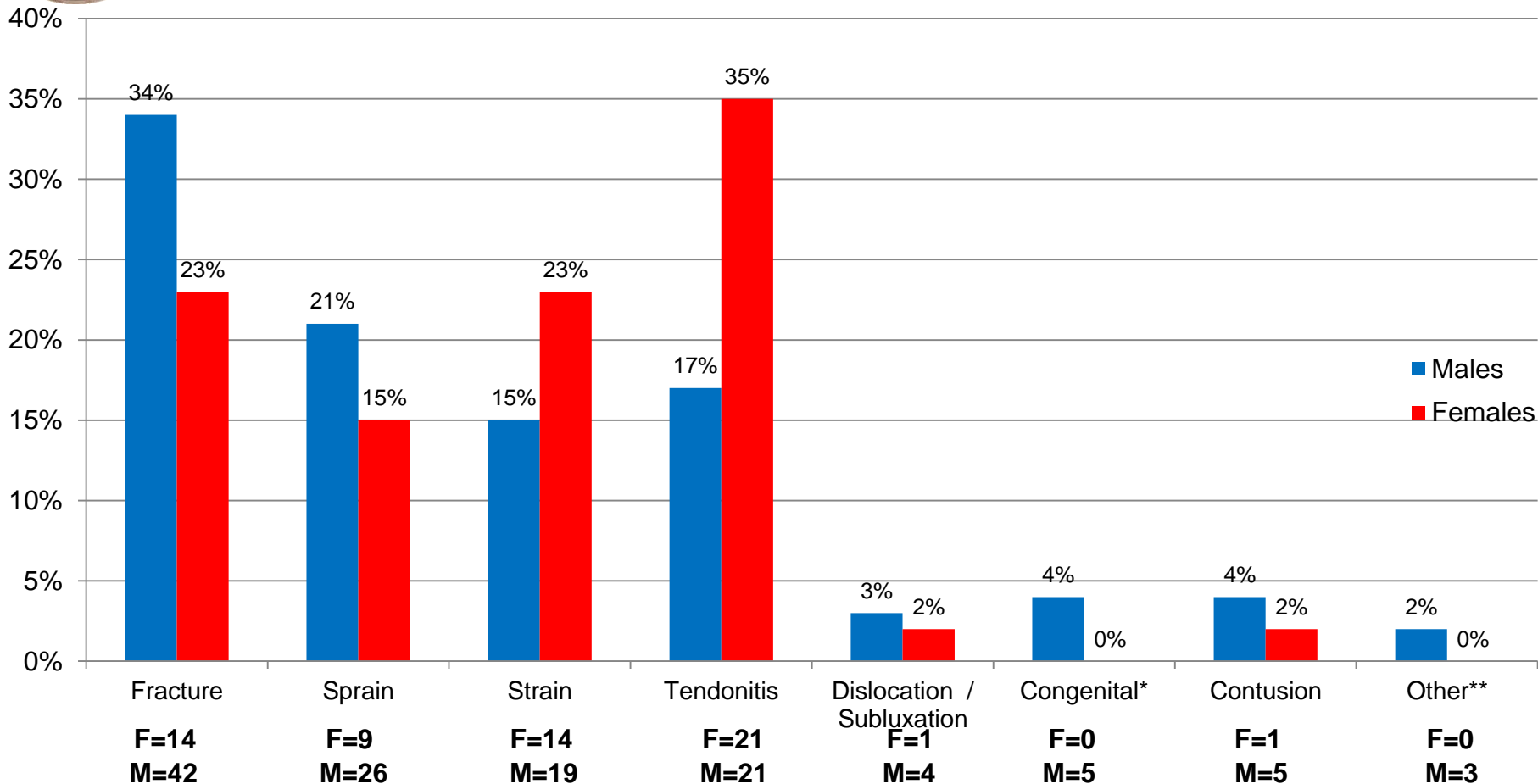
# Comparative Data: IPFT/FPFT Pull-ups







# ITB Injury Type (Male/Female)



- Injury Definition: Occurrence that caused Marine to lose training time (light duty or recycle)

- Injury Percentage= # of injuries by type/# of injuries reported

- \*Congenital: Pre-existing condition (eg. scoliosis) aggravated by training. 80% of these cases received waiver to enter USMC. Remaining case was fraudulent enlistment.

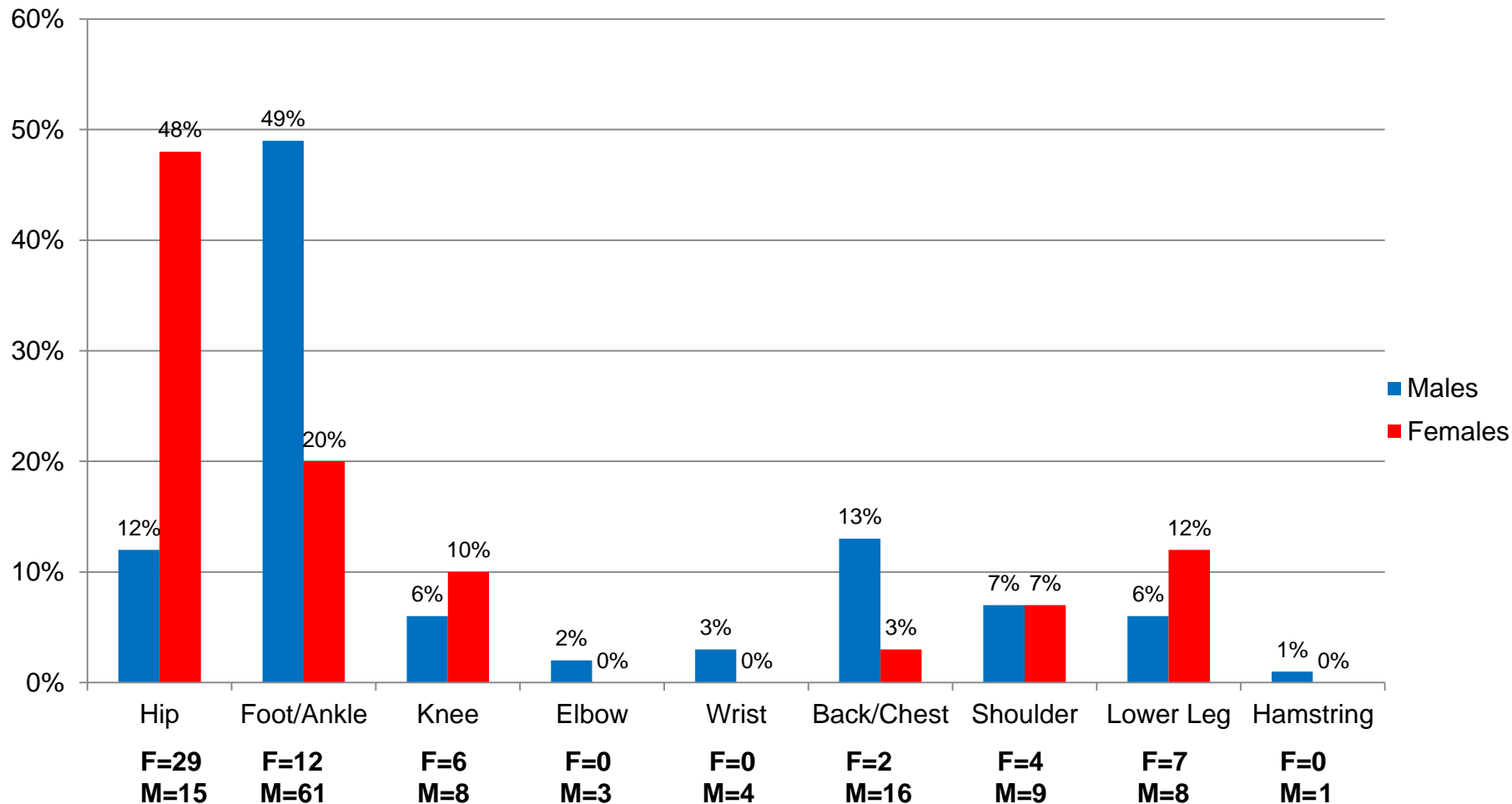
- \*\*Other: Cellulitis

- F=47 injuries reported to date (350 female Marines have entered training Sept 13 through Jan 15)

- M=99 injuries reported to date (3967 male Marines have entered training in the same time period)



# ITB Injury Location (Male/Female)

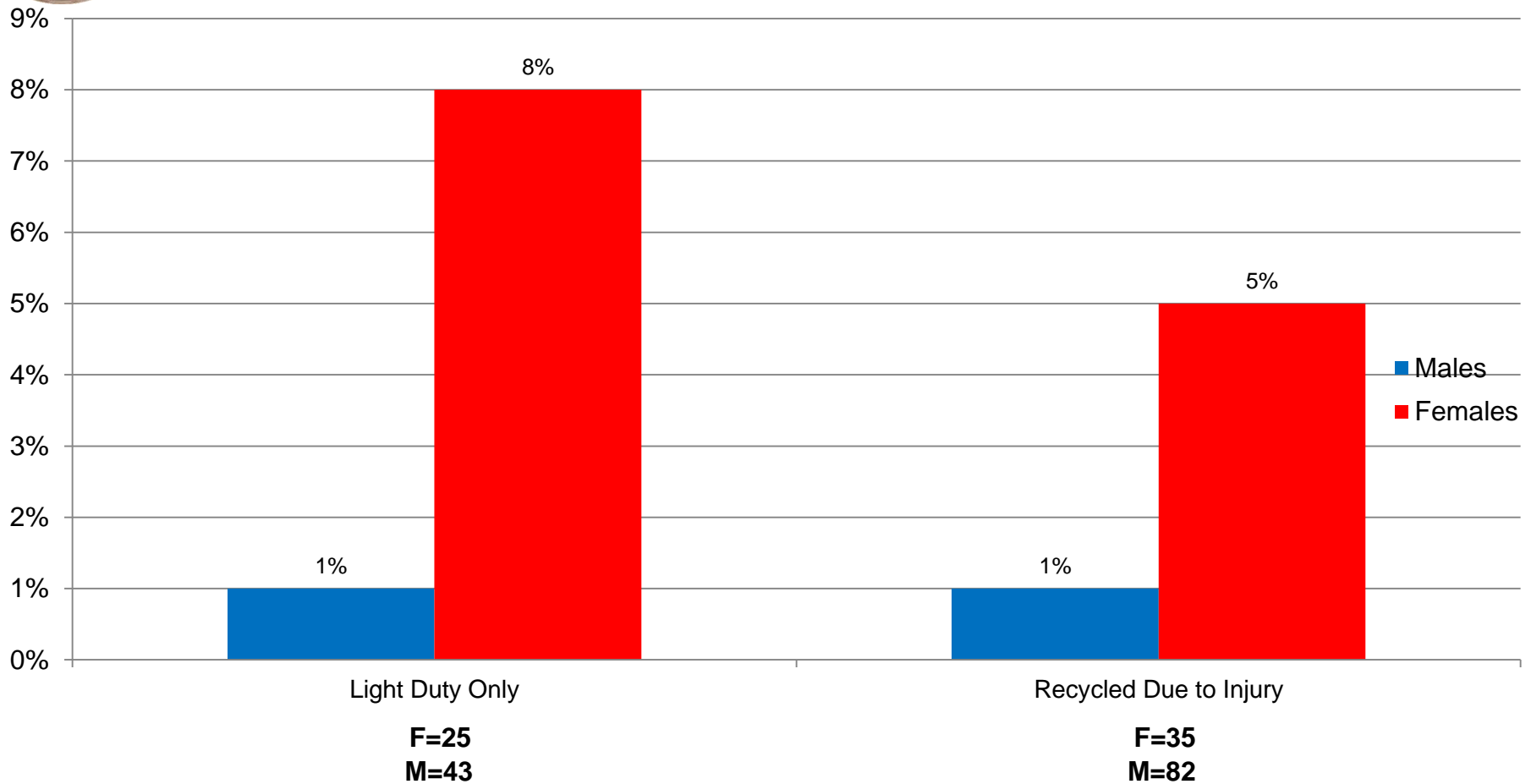


- Injury Definition: Occurrence that caused Marine to lose training time (light duty or recycle)
- Injury Percentage= # of injuries by location/# of injuries reported
- F=47 injuries reported to date (350 female Marines have entered training Sept 13 through Jan 15)
- M=99 injuries reported to date (3967 male Marines have entered training in the same time period)

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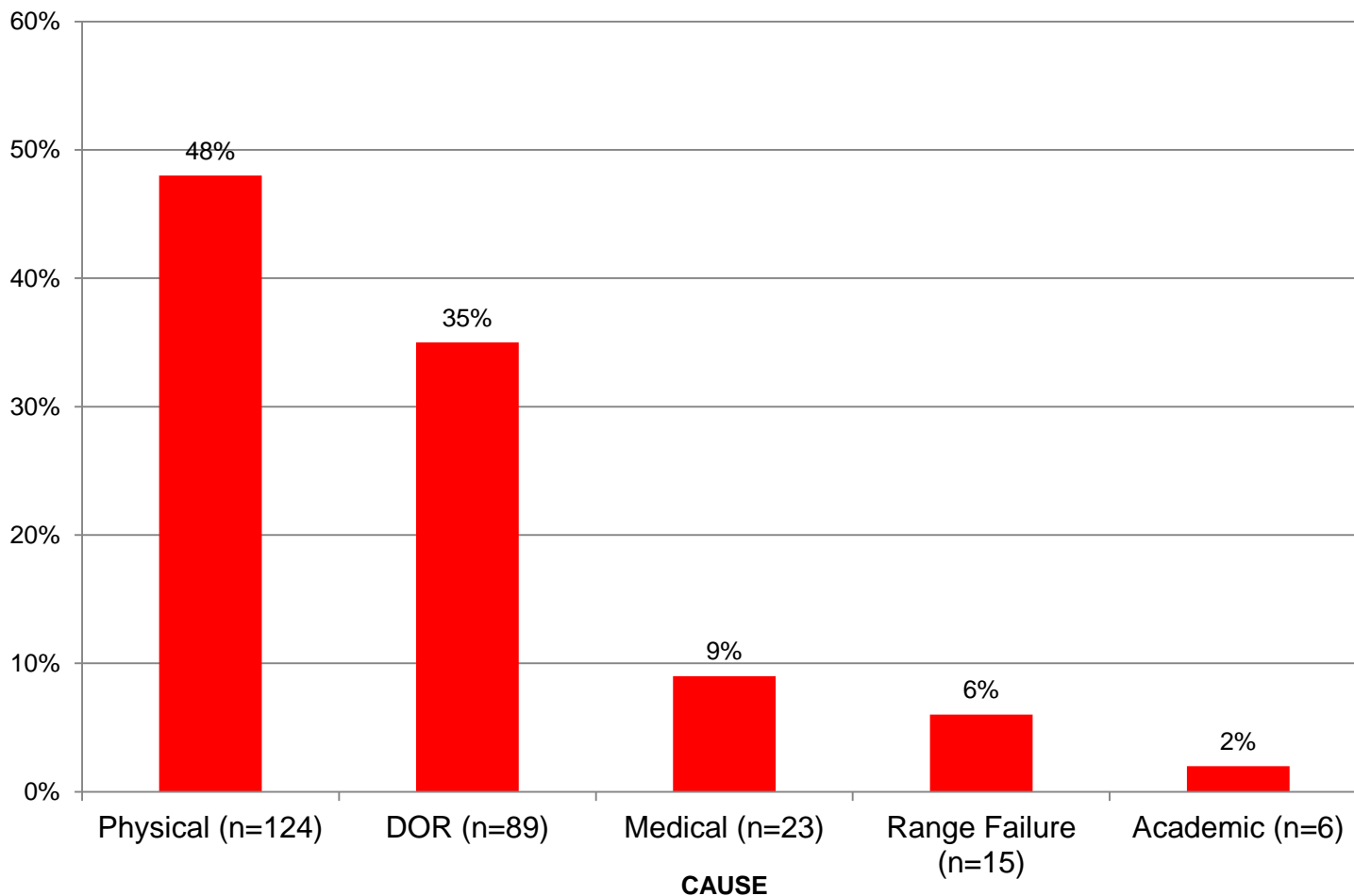
# ITB Injury Disposition



- Injury Definition: Occurrence that caused Marine to lose training time (light duty or recycle)
- F=60 injuries reported resulting in light duty or recycle
  - Of all injuries reported, 35 were serious enough to result in recycle
- M=125 injuries reported resulting in light duty or recycle
  - Of all injuries reported, 82 were serious enough to result in recycle

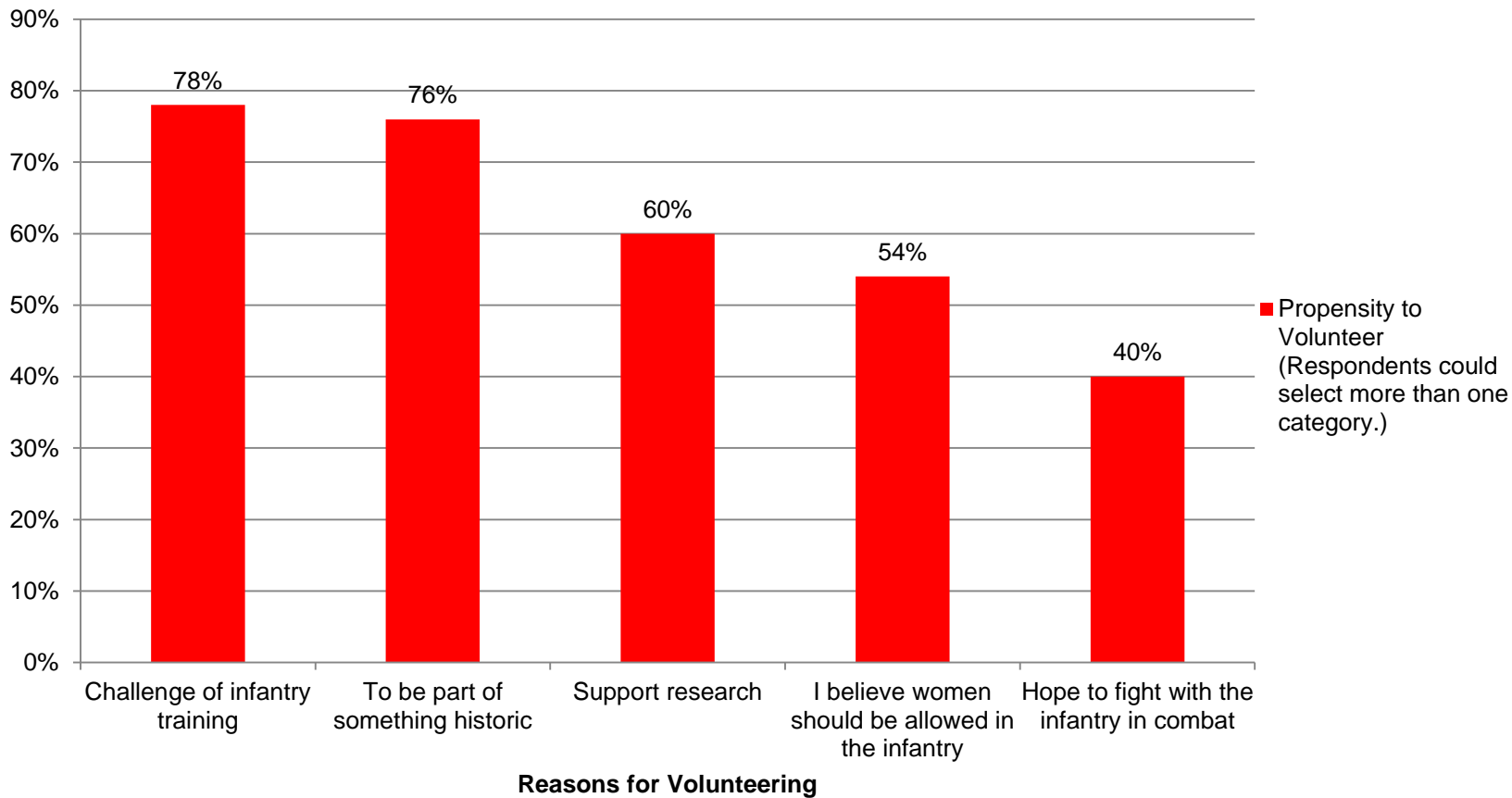


# ITB Female Attrition (n=257)



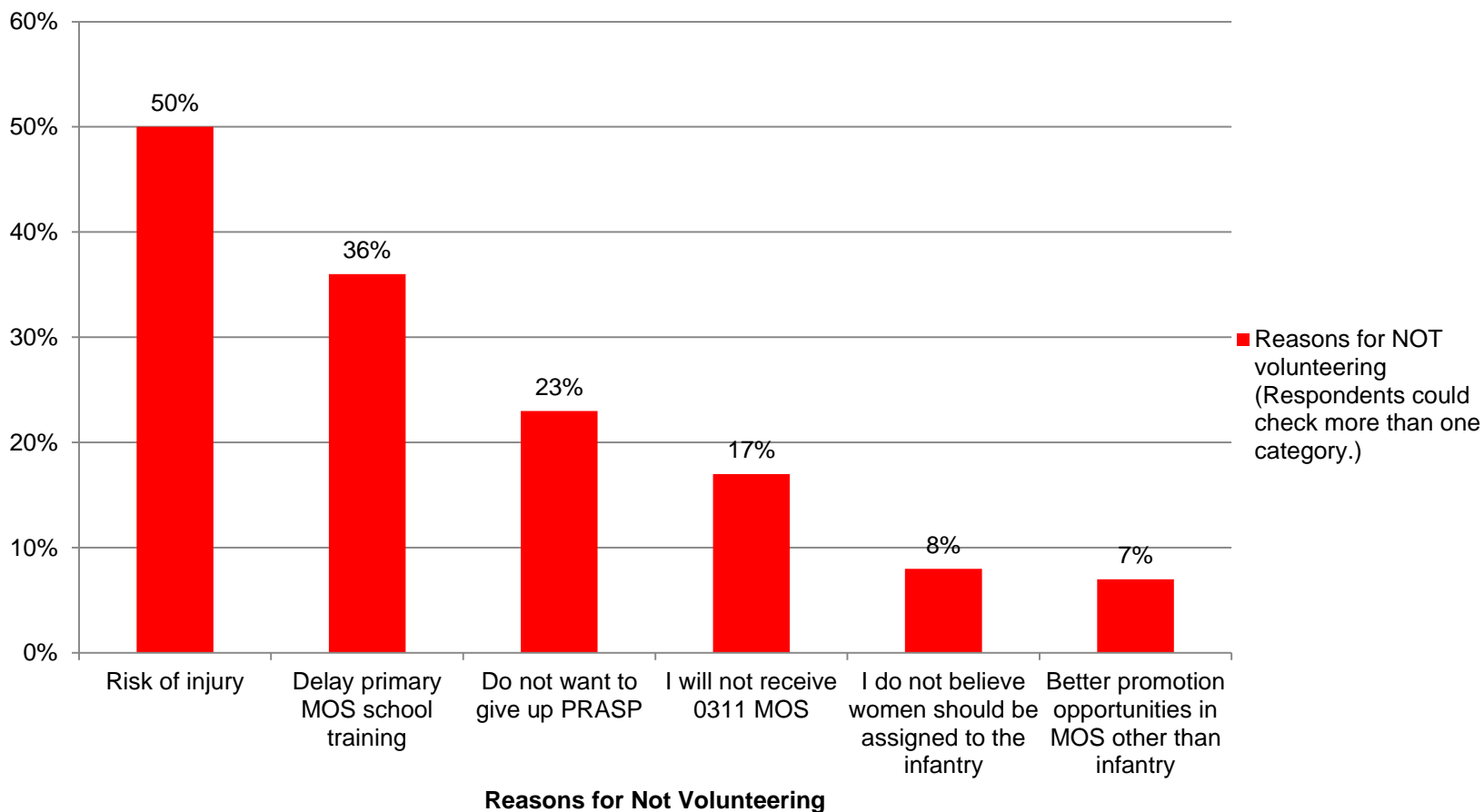


# ITB Propensity to Volunteer Data



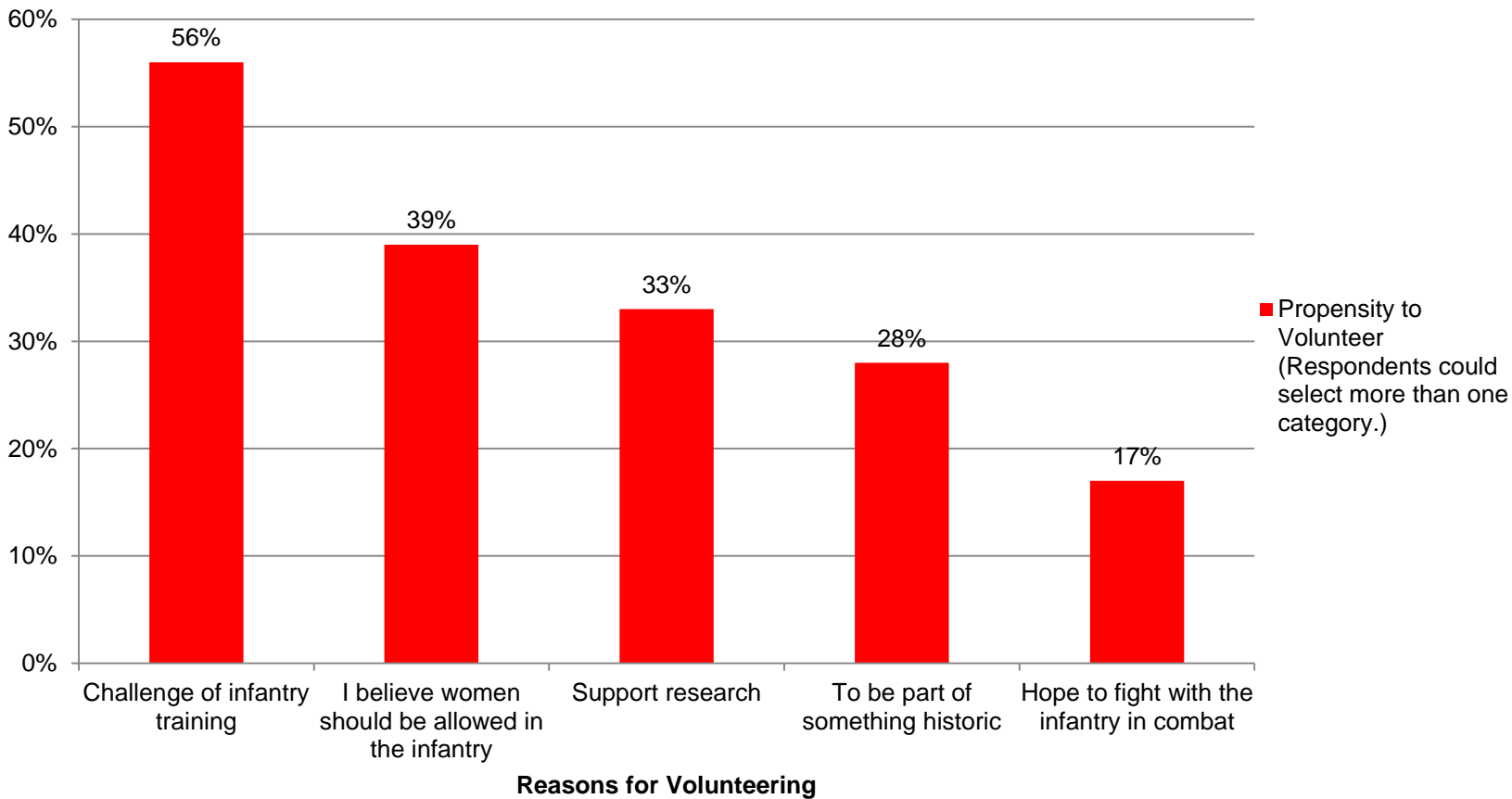


# ITB Propensity to Not Volunteer



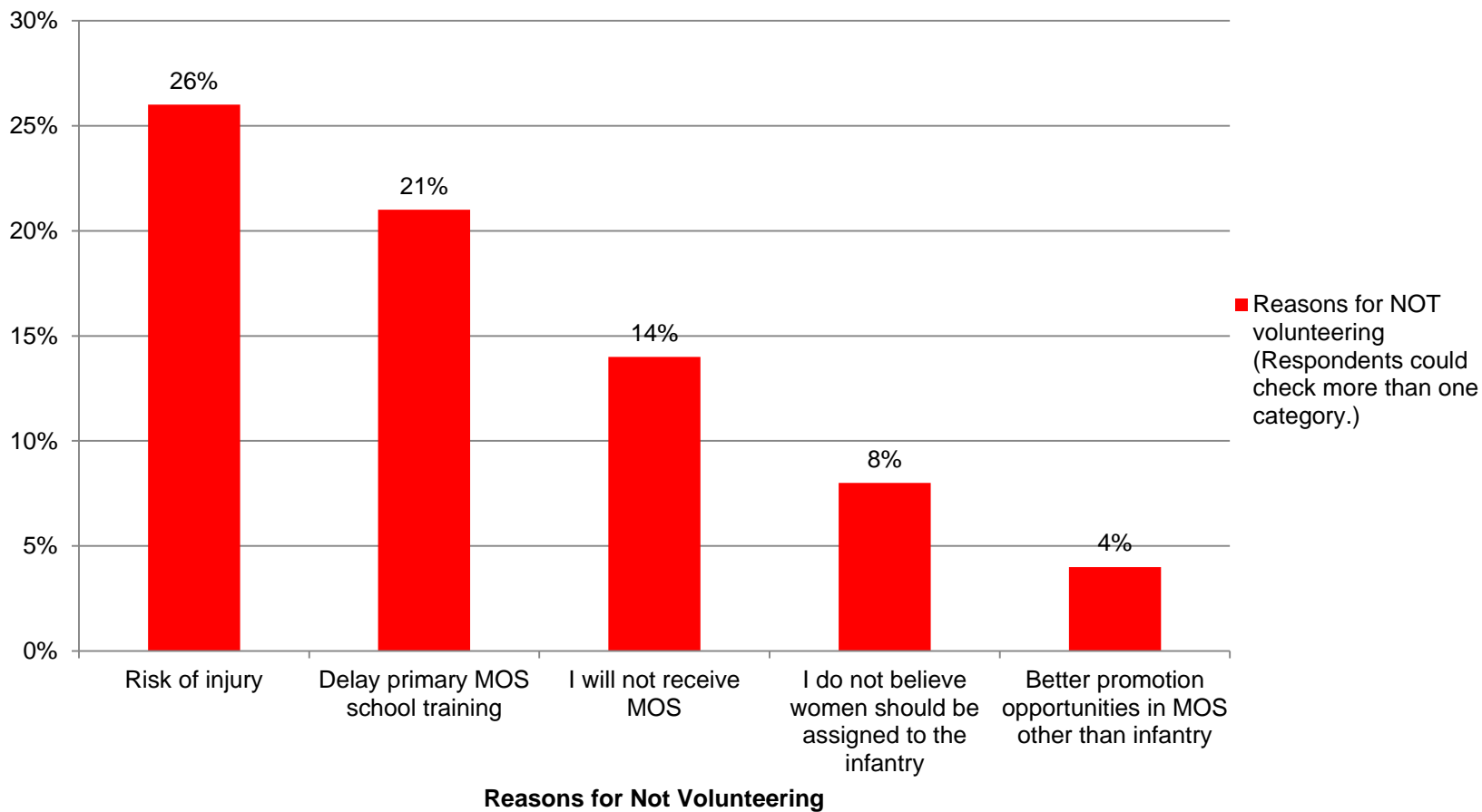


# IOC Propensity to Volunteer





# IOC Propensity to Not Volunteer

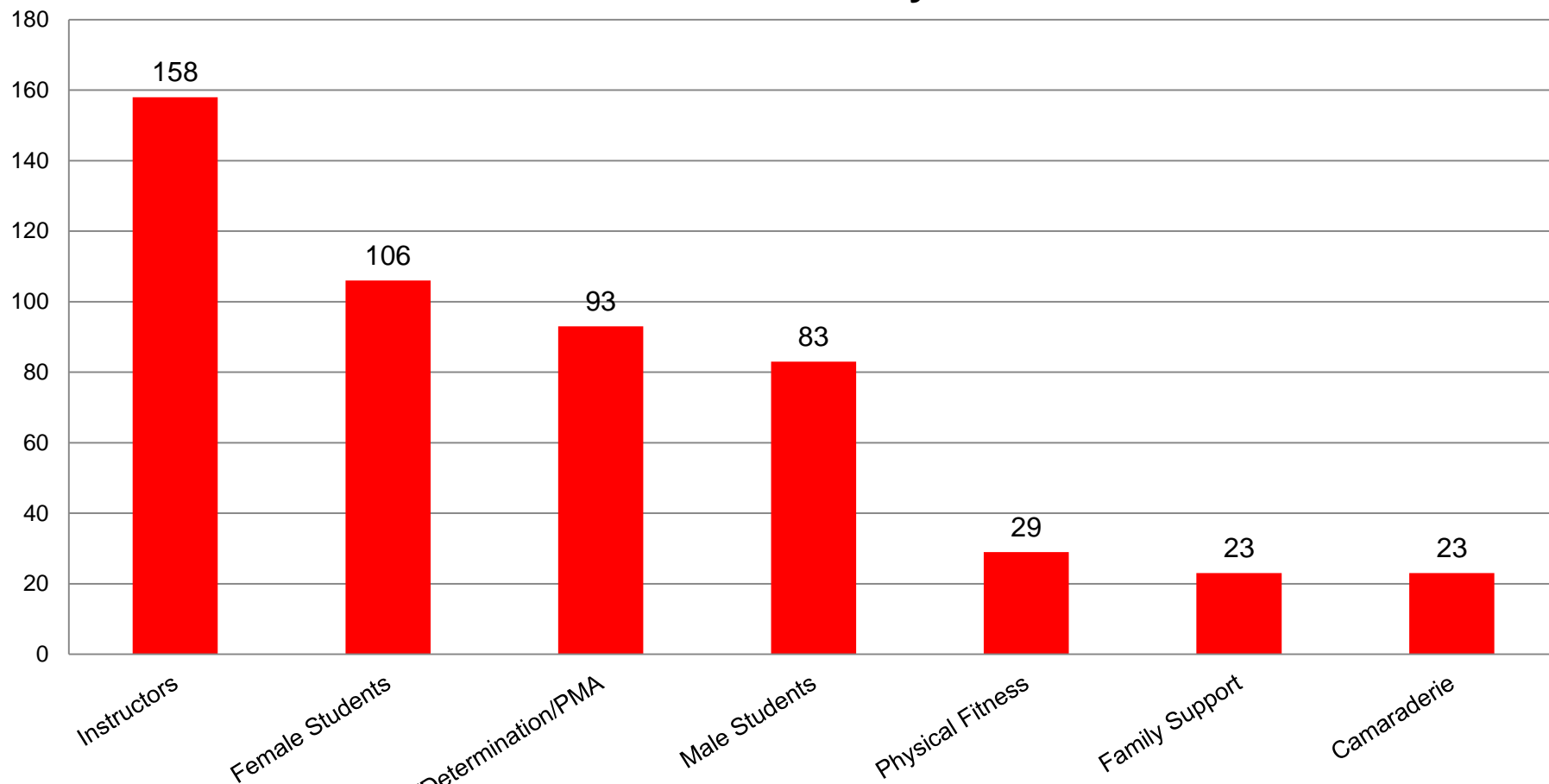






# Survey: “What Factors Contributed to your Success at ITB?”

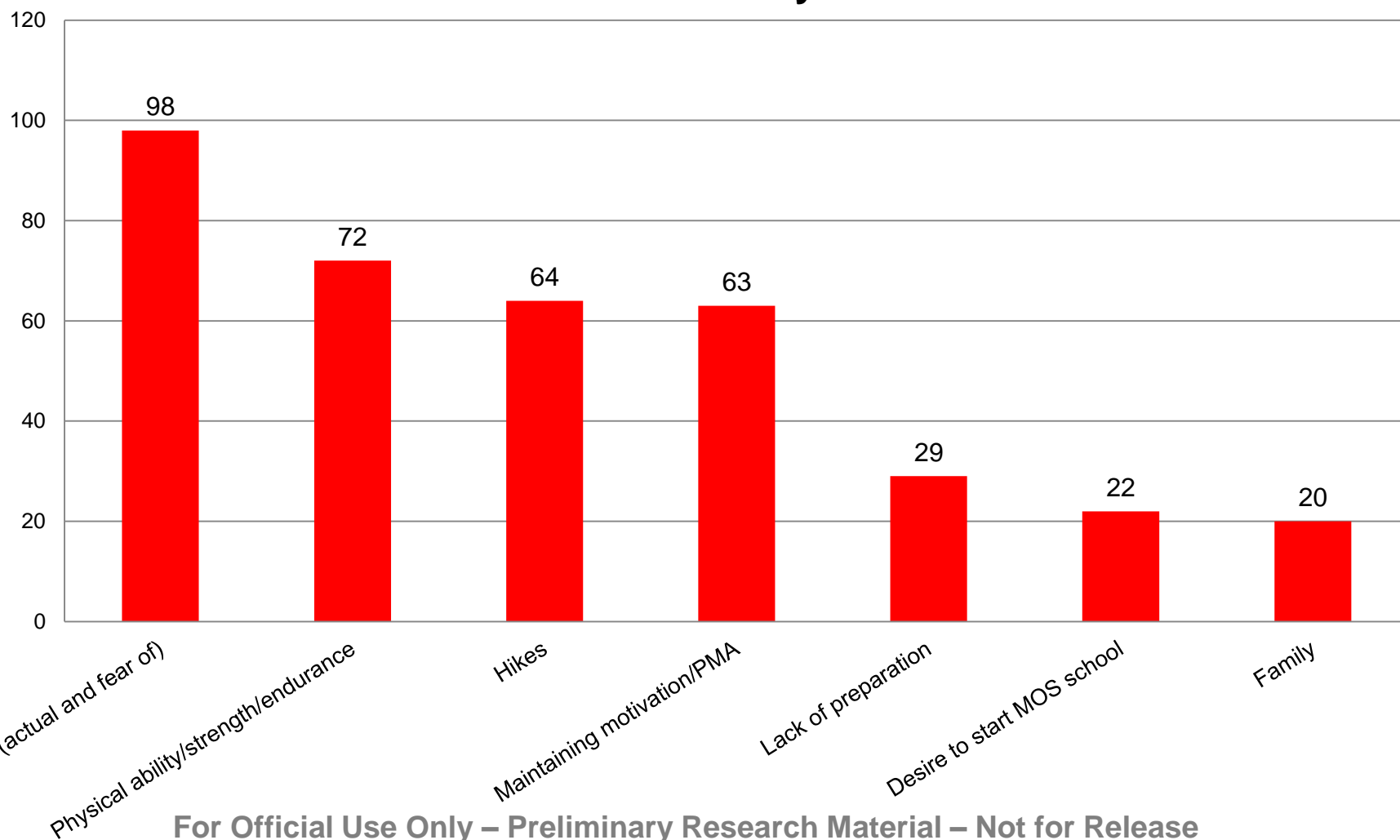
## Most Common Responses by Females who filled out the ITB Exit Survey





# Survey: “What Factors Contributed to your Challenges or Disenrollment at ITB?”

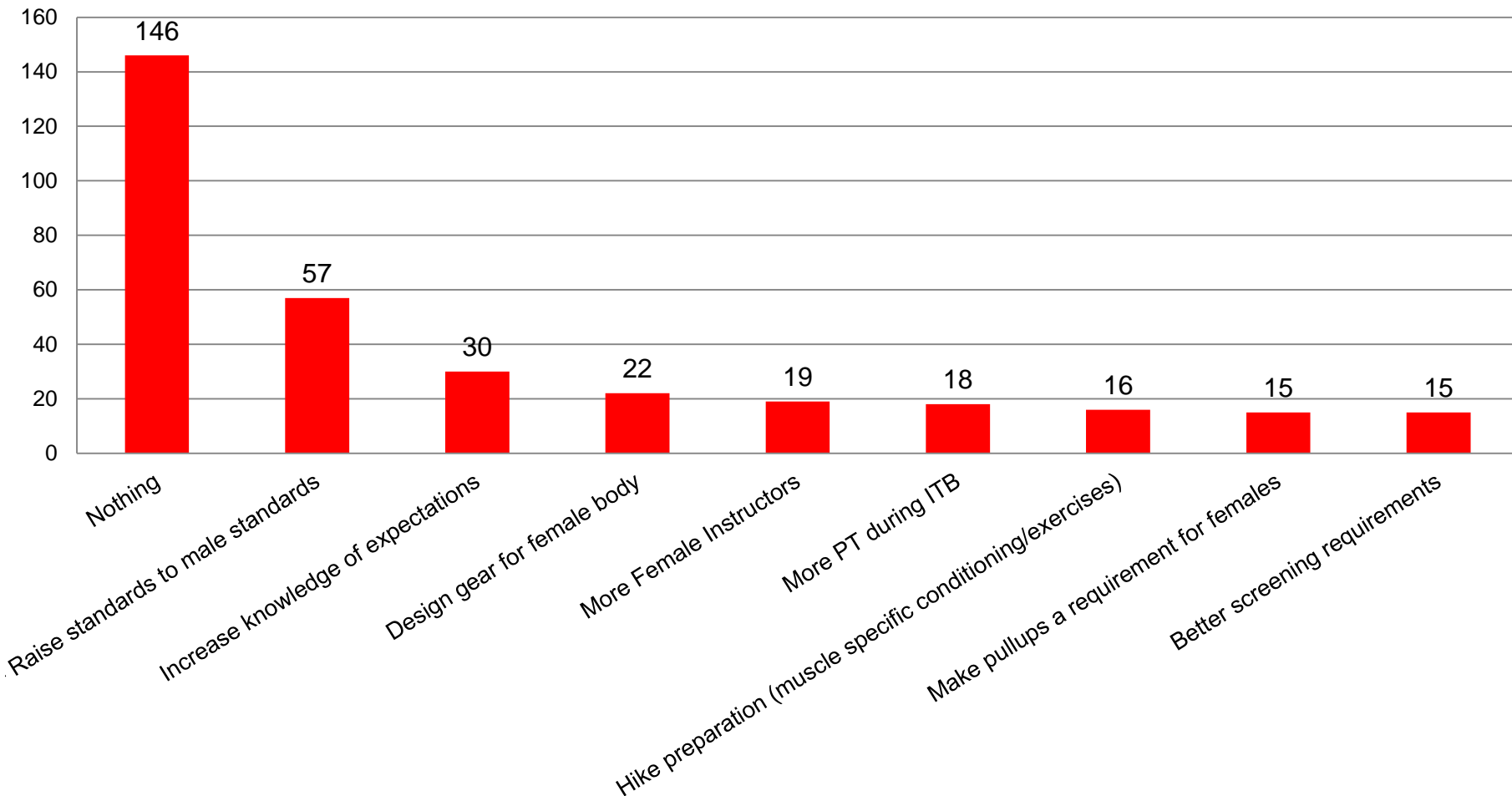
## Most Common Responses by Females who filled out the ITB Exit Survey





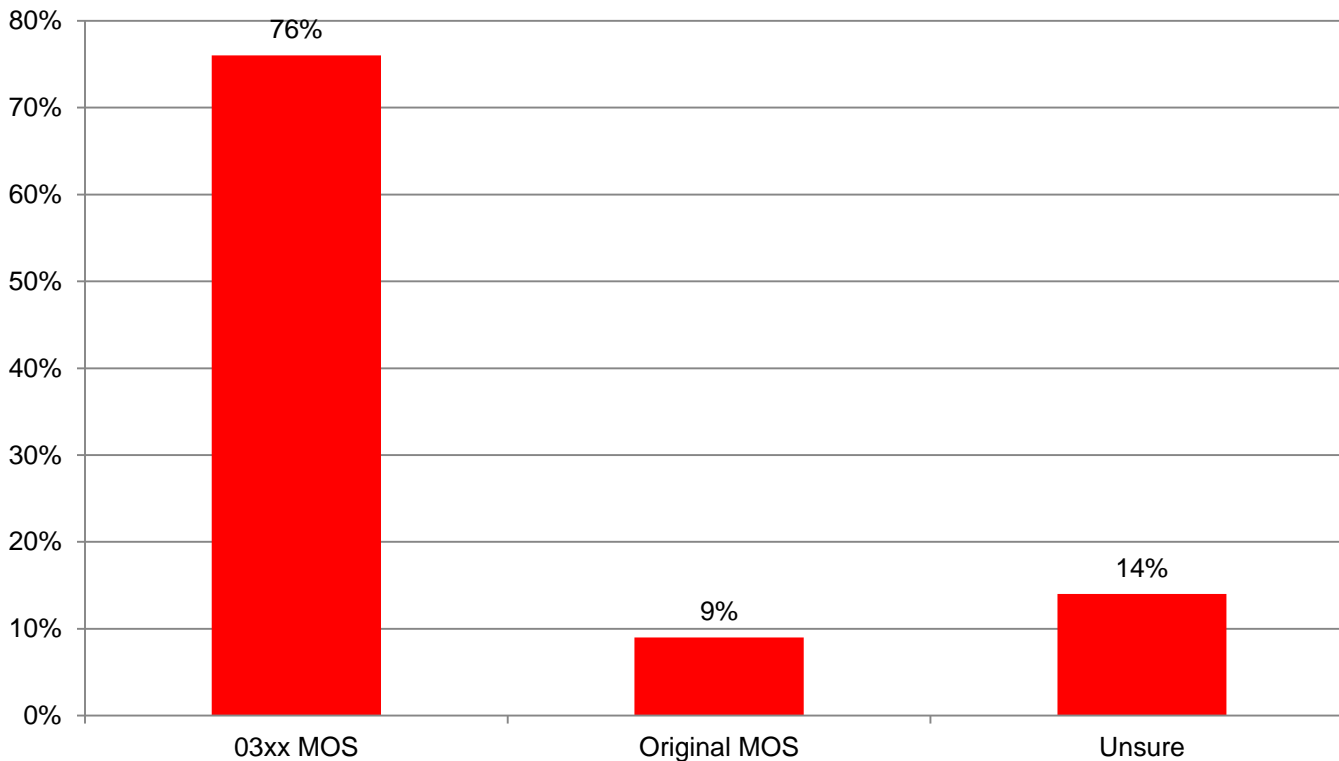
# Survey: “What factor(s) could the Marine Corps change at ITB to help more female volunteers successfully graduate?”

## Most Common Responses by Females who filled out the ITB Exit Survey



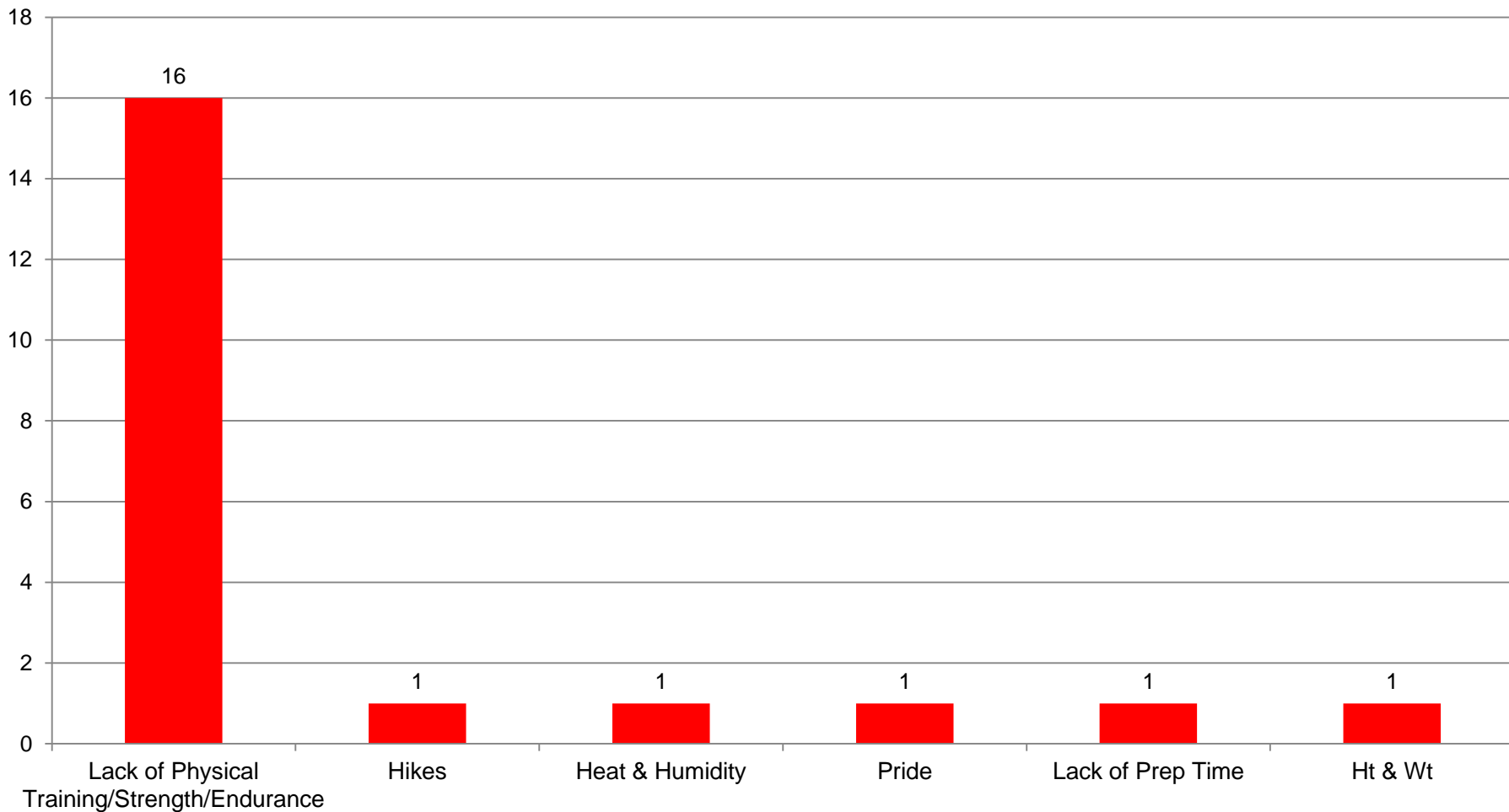


Survey: “As a successful graduate of Infantry Training Battalion, would you prefer to serve as an 03XX Infantry Marine INSTEAD of transferring to the Military Occupational Specialty (MOS) you originally enlisted for?”



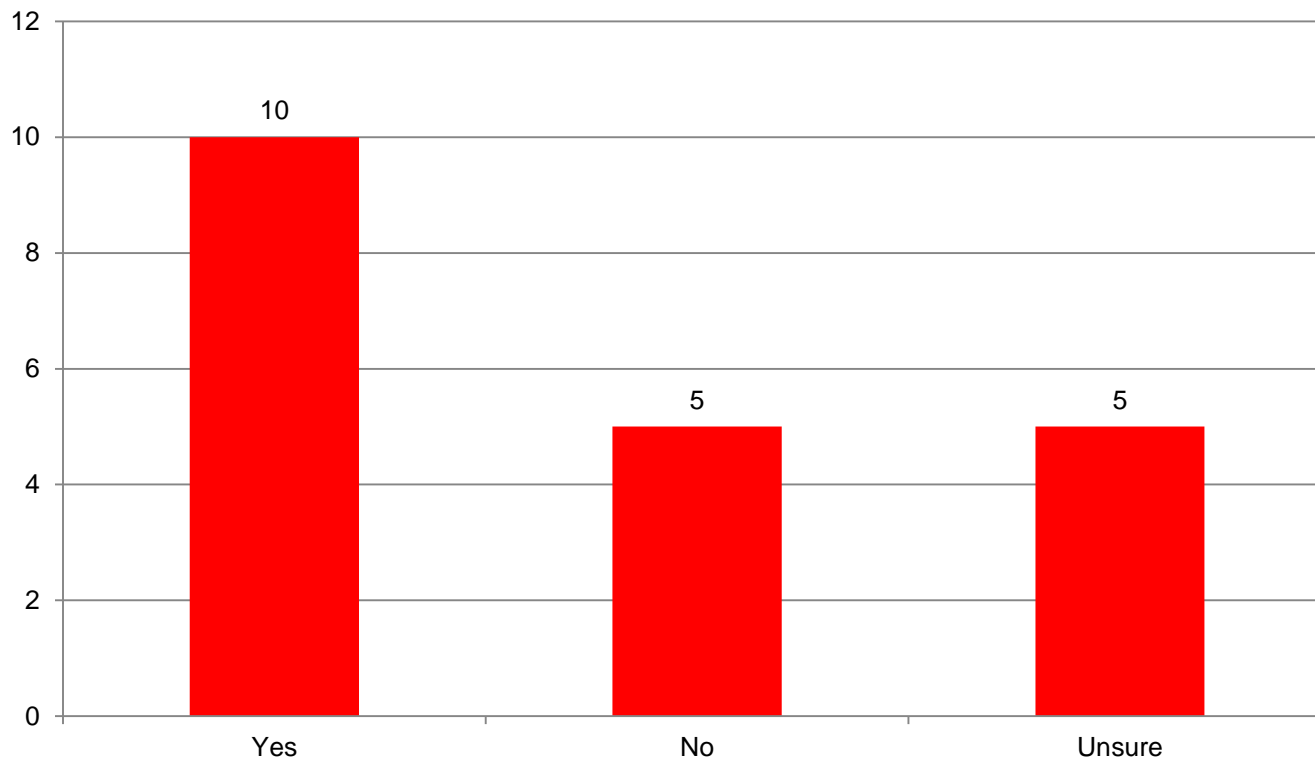


# Survey: “What Factors Contributed to your Challenges or Disenrollment at IOC?”





Survey: “If you volunteered for IOC, would you have done so if the 0302 MOS was open and you would have been required to accept an assignment to the infantry occupational field upon completing IOC?”

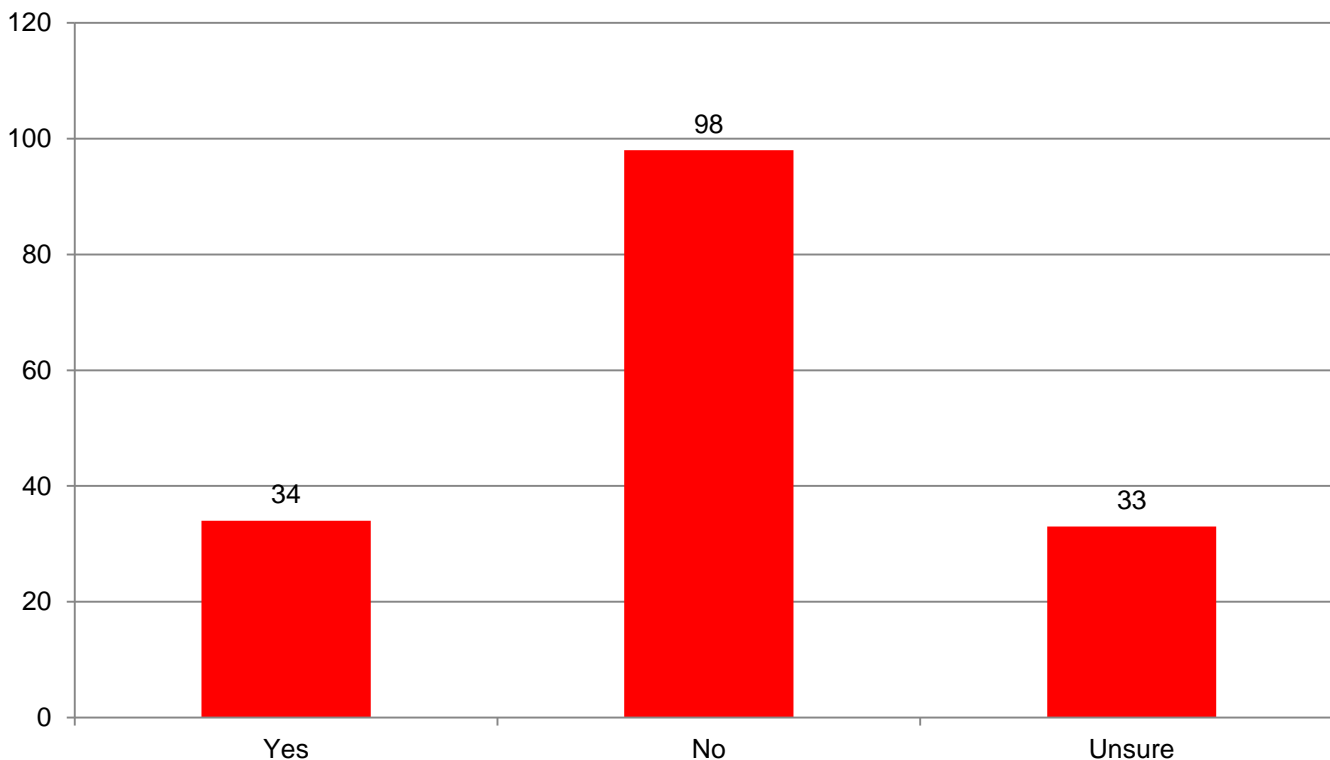


**20 Responses**



Survey: “If you volunteered for IOC, would you have done so if the 0302 MOS was open and you could have volunteered to the infantry occupational field upon completing IOC?”

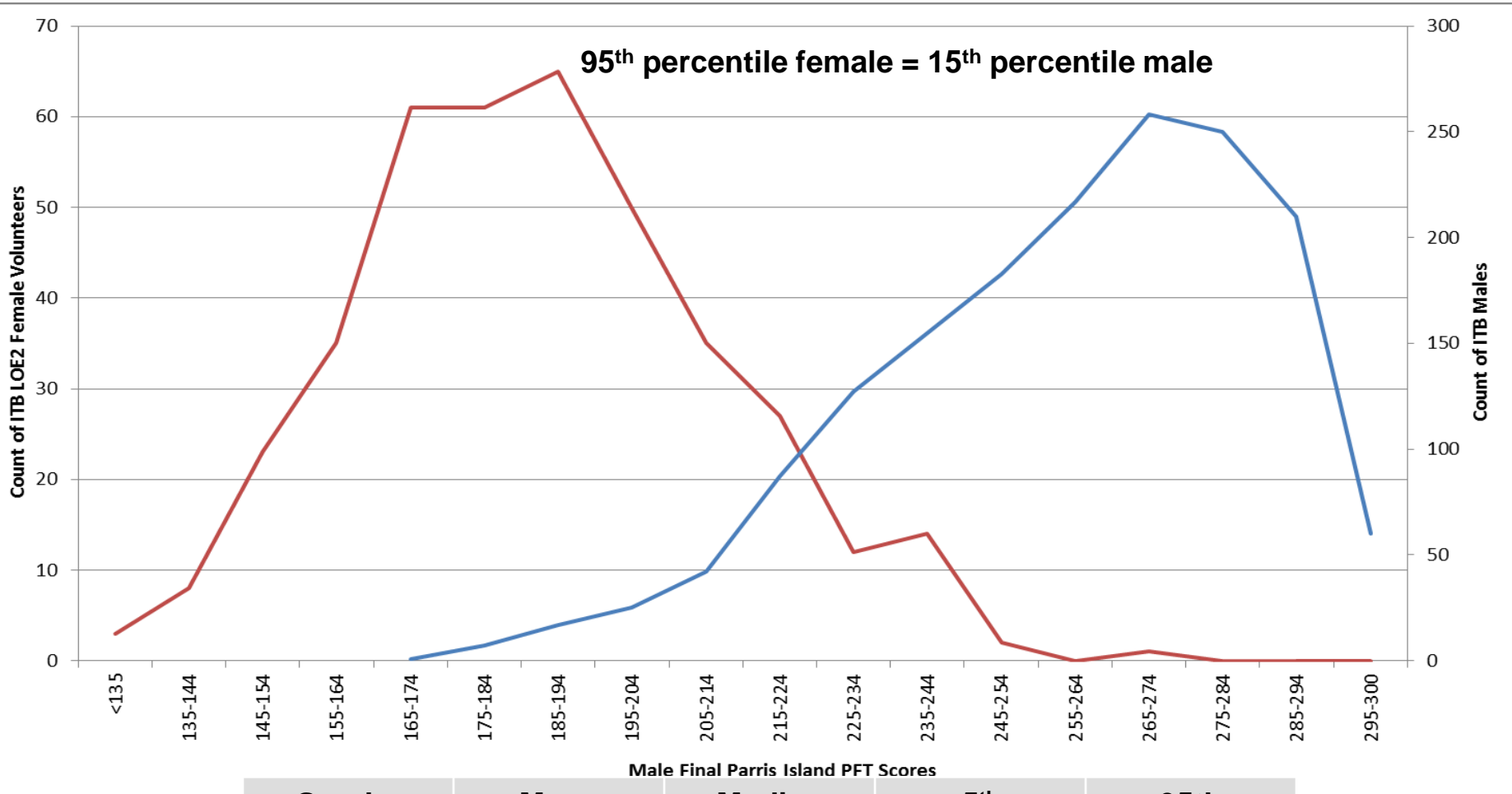
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**165 Responses**



# 03xx MCRD Final PFT Scores

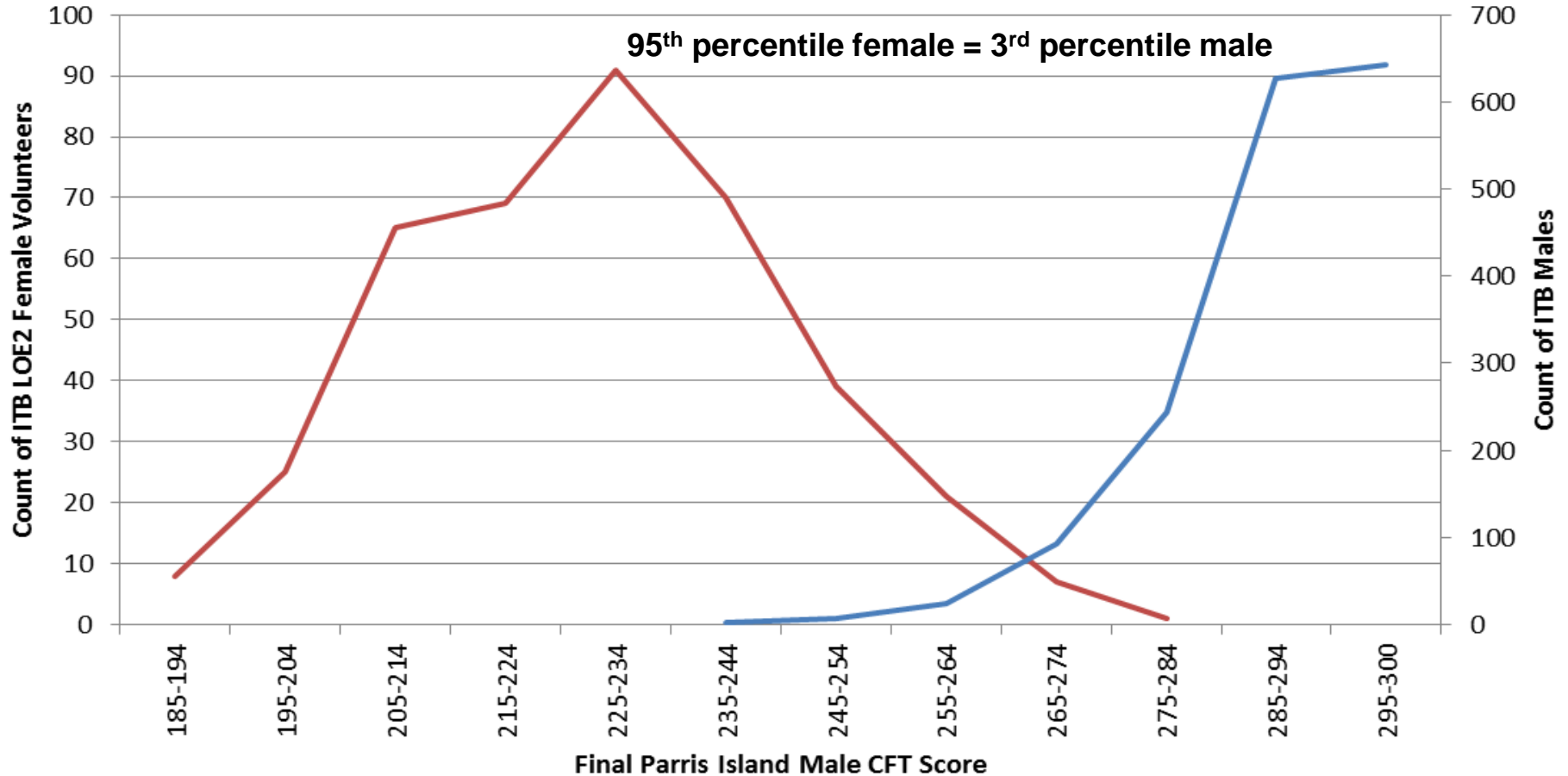


Gender	Mean	Median	5 <sup>th</sup>	95 <sup>th</sup>
F	186	185	150	230
M	259	262	213	293





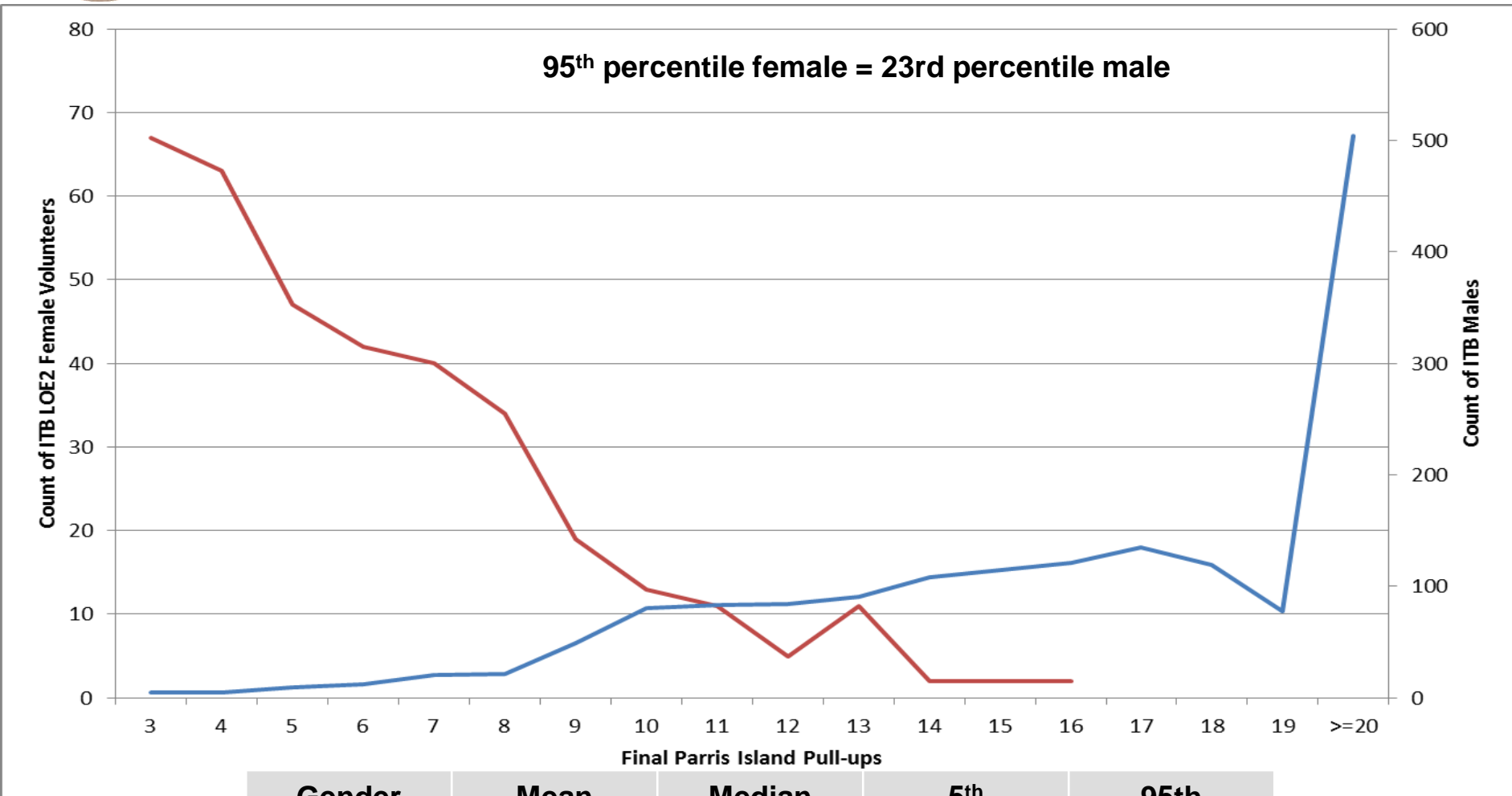
# 03xx Final MCRD CFT Scores



Gender	Mean	Median	5 <sup>th</sup>	95 <sup>th</sup>
F	237	237	209	268
M	290	292	272	300



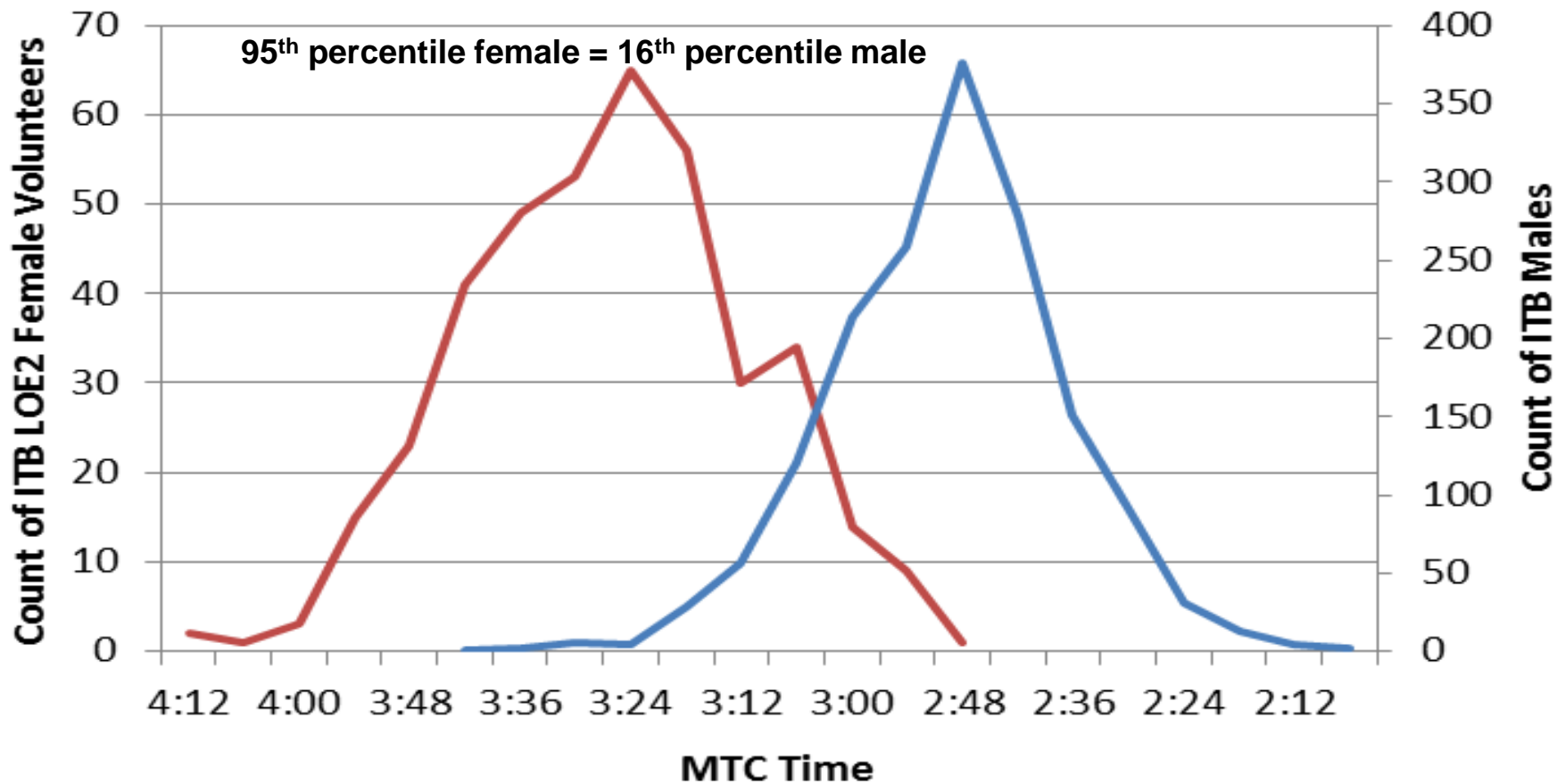
# 03xx MCRD Final PFT Pull-ups



Gender	Mean	Median	5 <sup>th</sup>	95 <sup>th</sup>
F	6.3	6	3	13
M	16.1	17	9	22



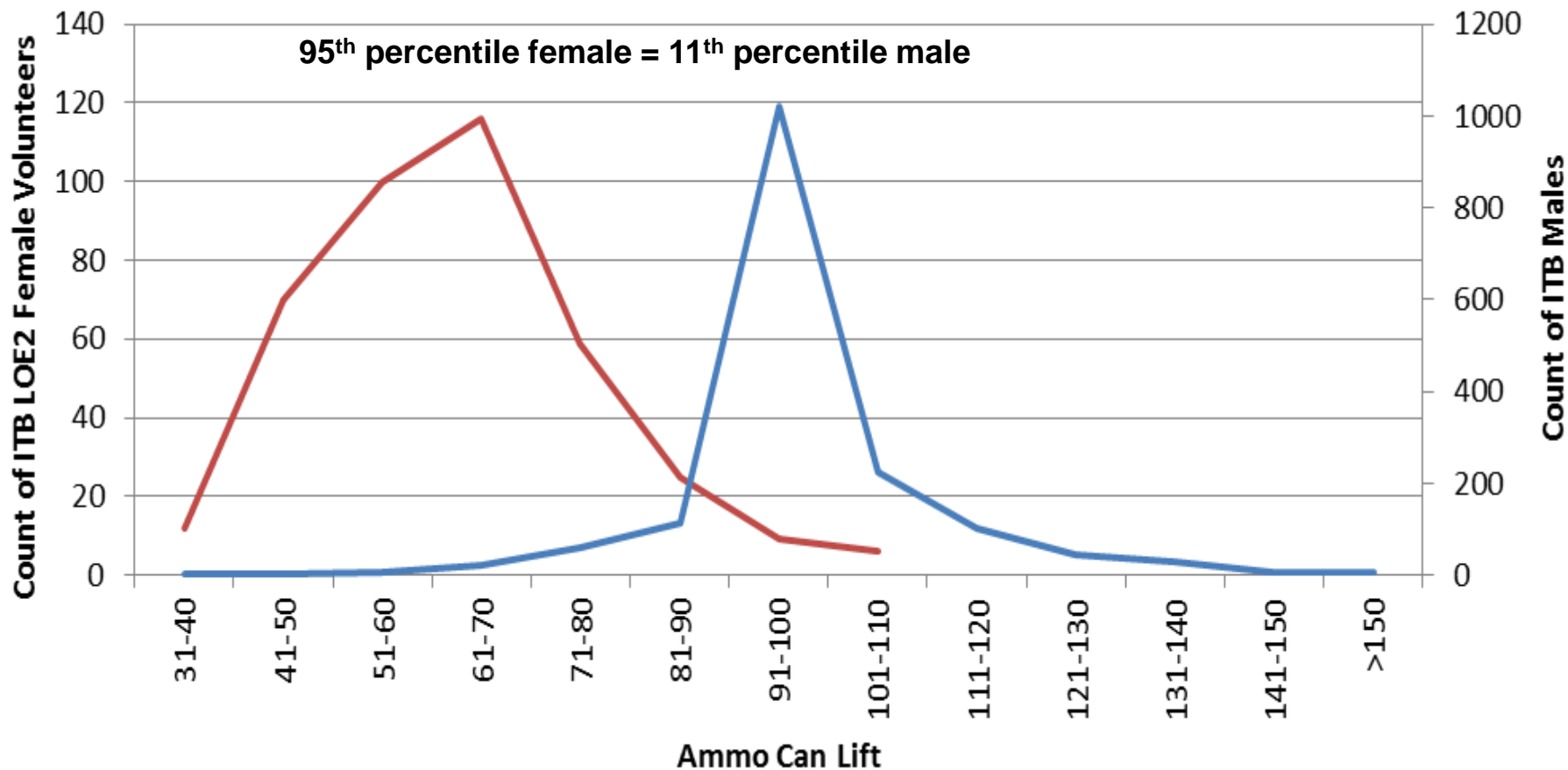
# 03xx MCRD Final CFT 'MTC' Time



Gender	Mean	Median	5 <sup>th</sup>	95 <sup>th</sup>
F	3:25	3:26	3:51	3:01
M	2:49	2:48	3:10	2:18



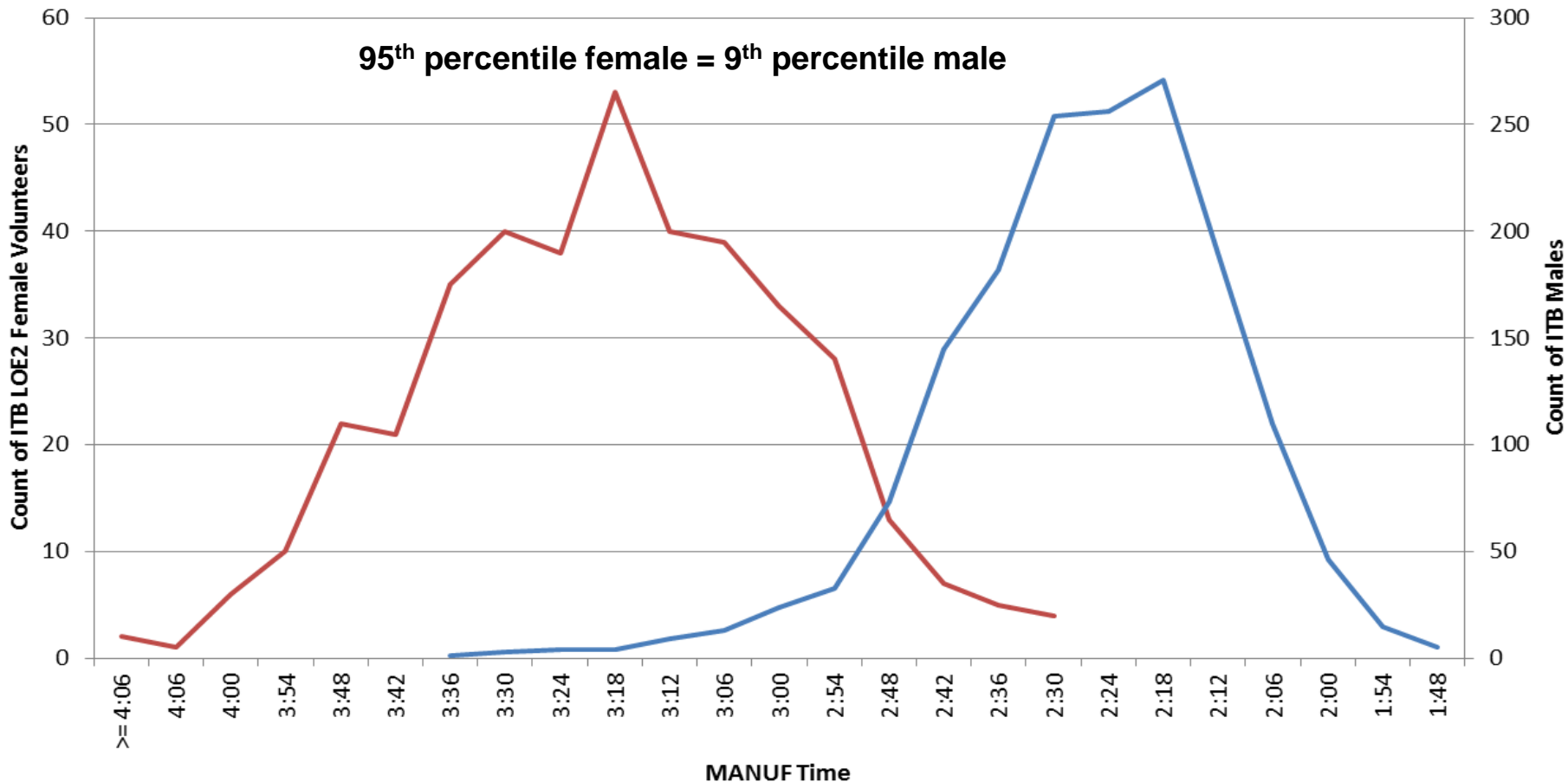
# 03xx MCRD Final CFT Ammo Can Lift



Gender	Mean	Median	5 <sup>th</sup>	95 <sup>th</sup>
F	63	61	42	89
M	98	100	80	121



# 03xx MCRD Final CFT 'MANUF' Time



Gender	Mean	Median	5 <sup>th</sup>	95 <sup>th</sup>
F	3:18	3:19	3:50	2:46
M	2:26	2:25	2:52	2:04



# Analysis: Statistical Distribution of LOE 2 03xx Females and Males

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<b>Event</b>	<b>95<sup>th</sup> Percentile Female</b>	<b>% for Male of the 95<sup>th</sup> Percentile Female</b>	<b>95<sup>th</sup> Percentile Male</b>
Pull-ups	13	15 <sup>th</sup> Percentile	22 pull-ups
MTC	3:01	16 <sup>th</sup>	2:18
Ammo Can Lift	89	11 <sup>th</sup>	121
MANUF	2:46	9 <sup>th</sup>	2:04
Final PFT Scores	230	15 <sup>th</sup>	293
Final CFT Scores	268	3 <sup>rd</sup>	300
Shipping Height	68"	24 <sup>th</sup>	74"
Shipping Weight	157 lbs	39 <sup>th</sup>	201 lbs



# Analysis: Combined Multivariate Linear Regressions (03xx Males/Females)

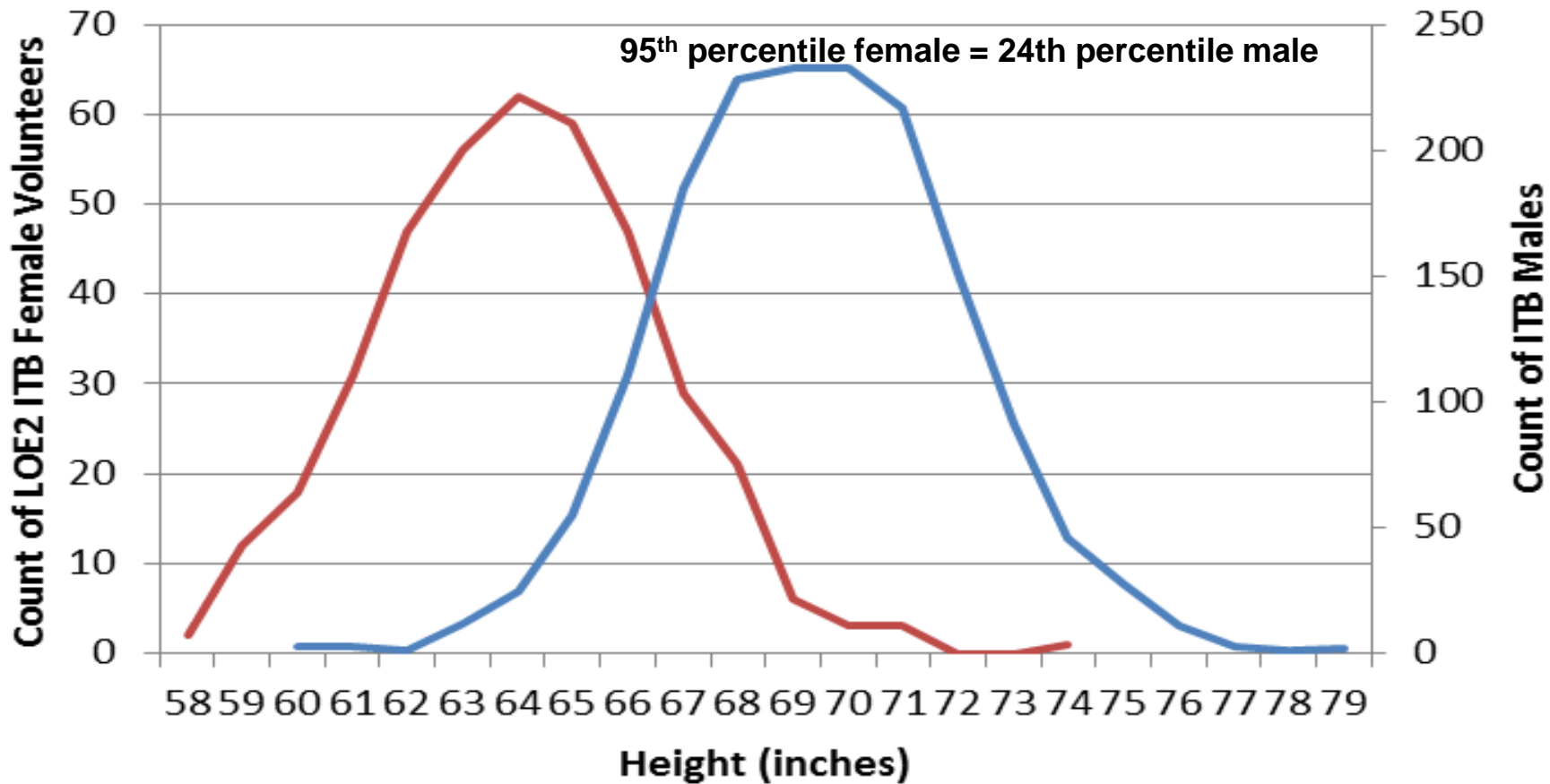
- Regressions identified strong performance indicators with MCRD Final PFT pull-ups and MCRD Final CFT events

Event	P-value
Pull-ups	<.0001
Movement to Contact	<.0001
Maneuver under Fire	<.0001
Shipping Height	<.0001
Ammo Lift	.0002
Shipping Weight	.0019
Crunches	.1037
WK	.348
Run Time	.3908
AS	.5079

Event	P-value
CL	.5273
EI	.6619
MK	.7155
GT	.7363
GS	.7572
EL	.7661
MC	.8140
AFQT	.8447
AR	.9339



# 03xx Shipping Height

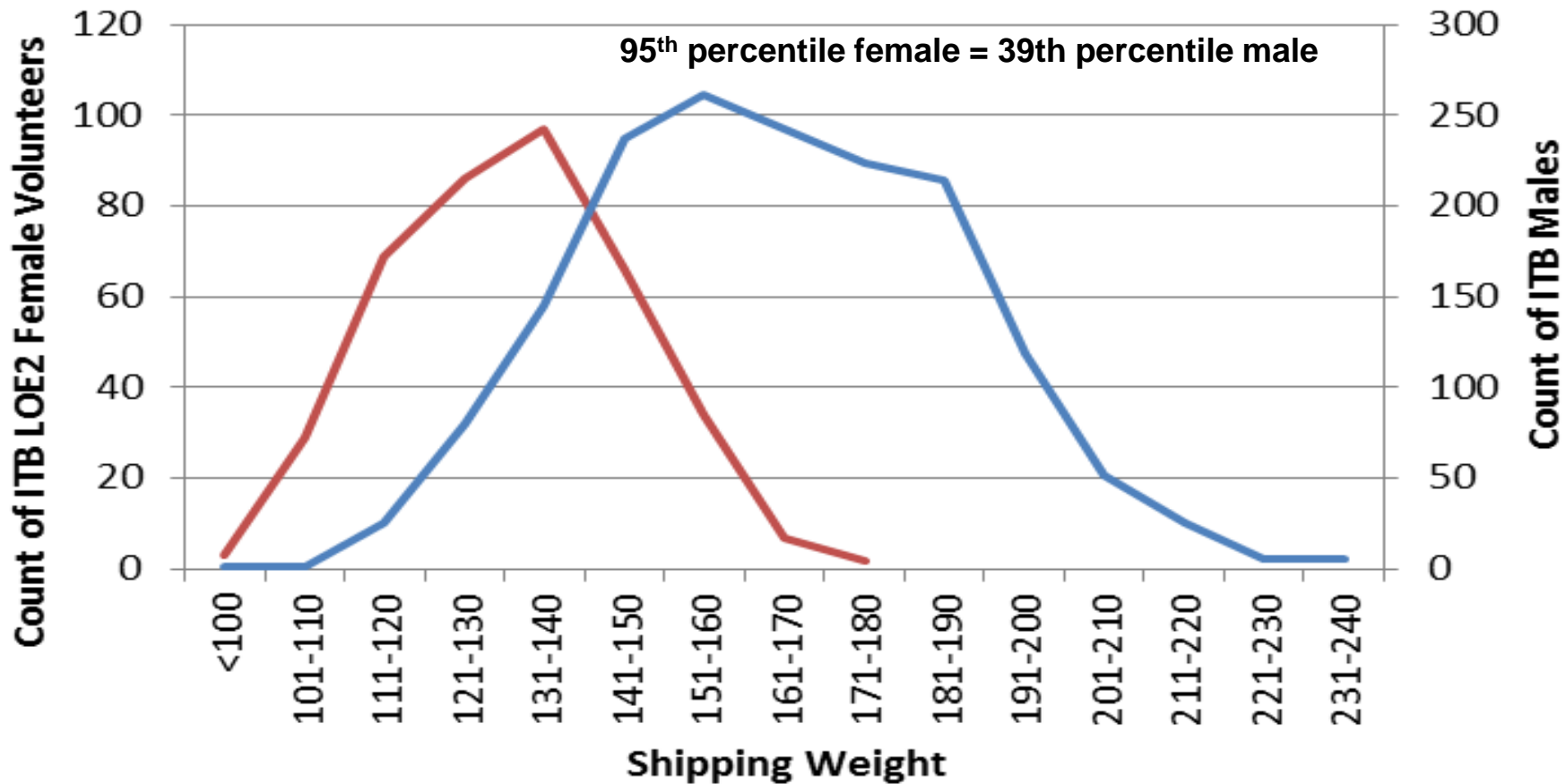


Gender	Mean	Median	5 <sup>th</sup>	95 <sup>th</sup>
F	64	64	60	68
M	69	69	65	74





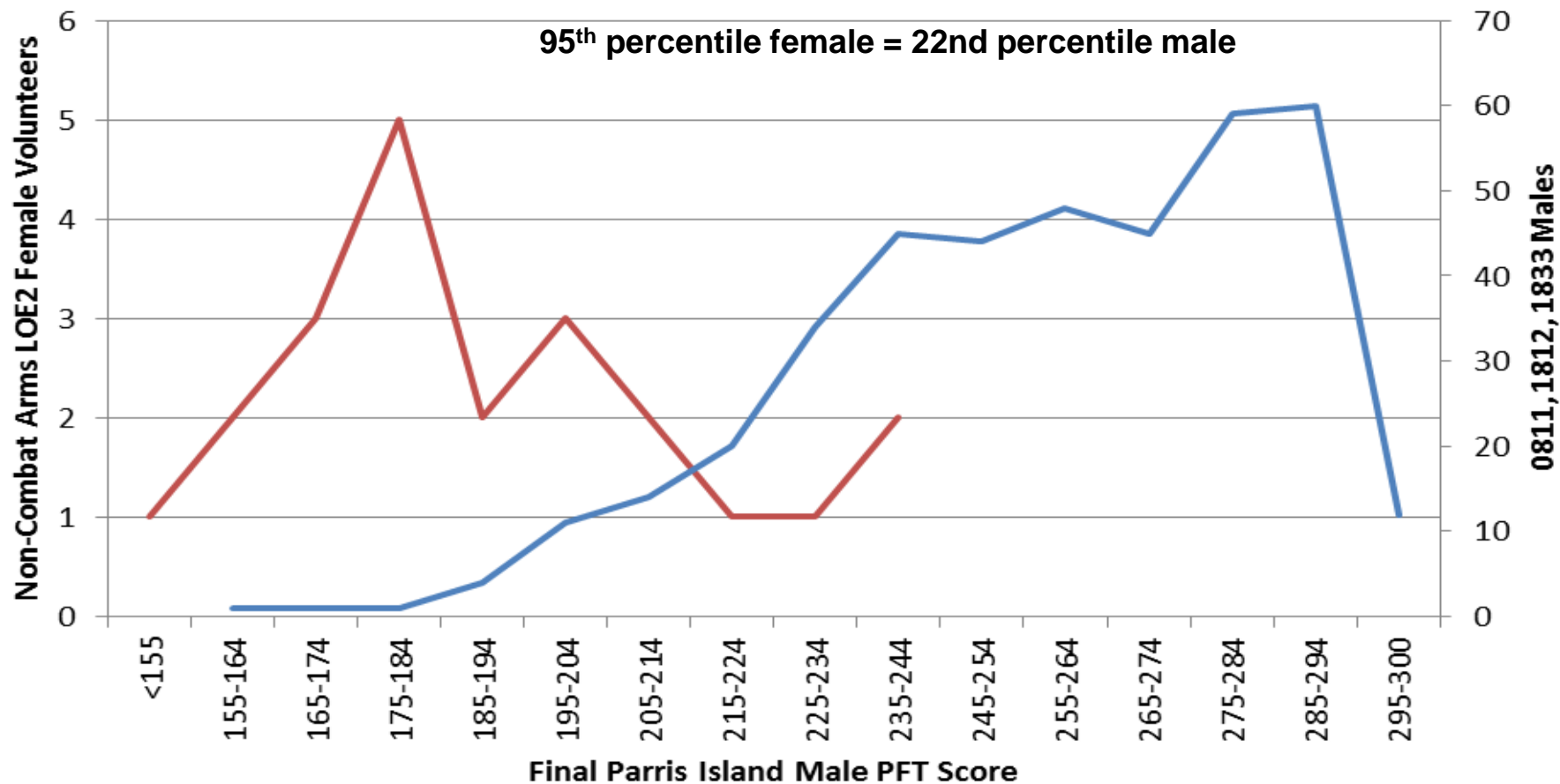
# 03xx Shipping Weight



Gender	Mean	Median	5 <sup>th</sup>	95 <sup>th</sup>
F	131	132	108	157
M	164	163	129	201



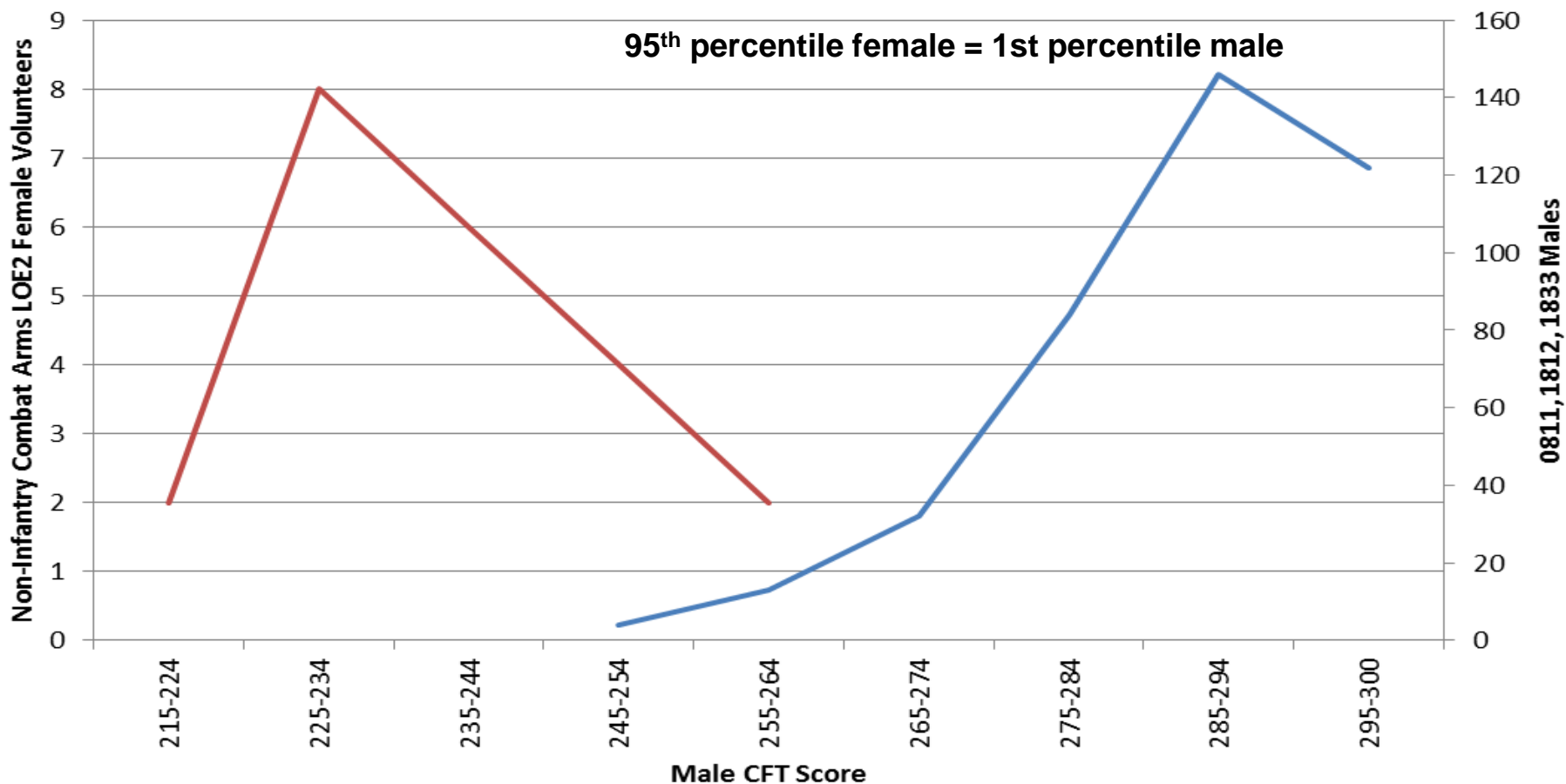
# Combat Arms Final MCRD PFT Scores



Gender	Mean	Median	5 <sup>th</sup>	95 <sup>th</sup>
F	191	183	162	235
M	256	260	205	291



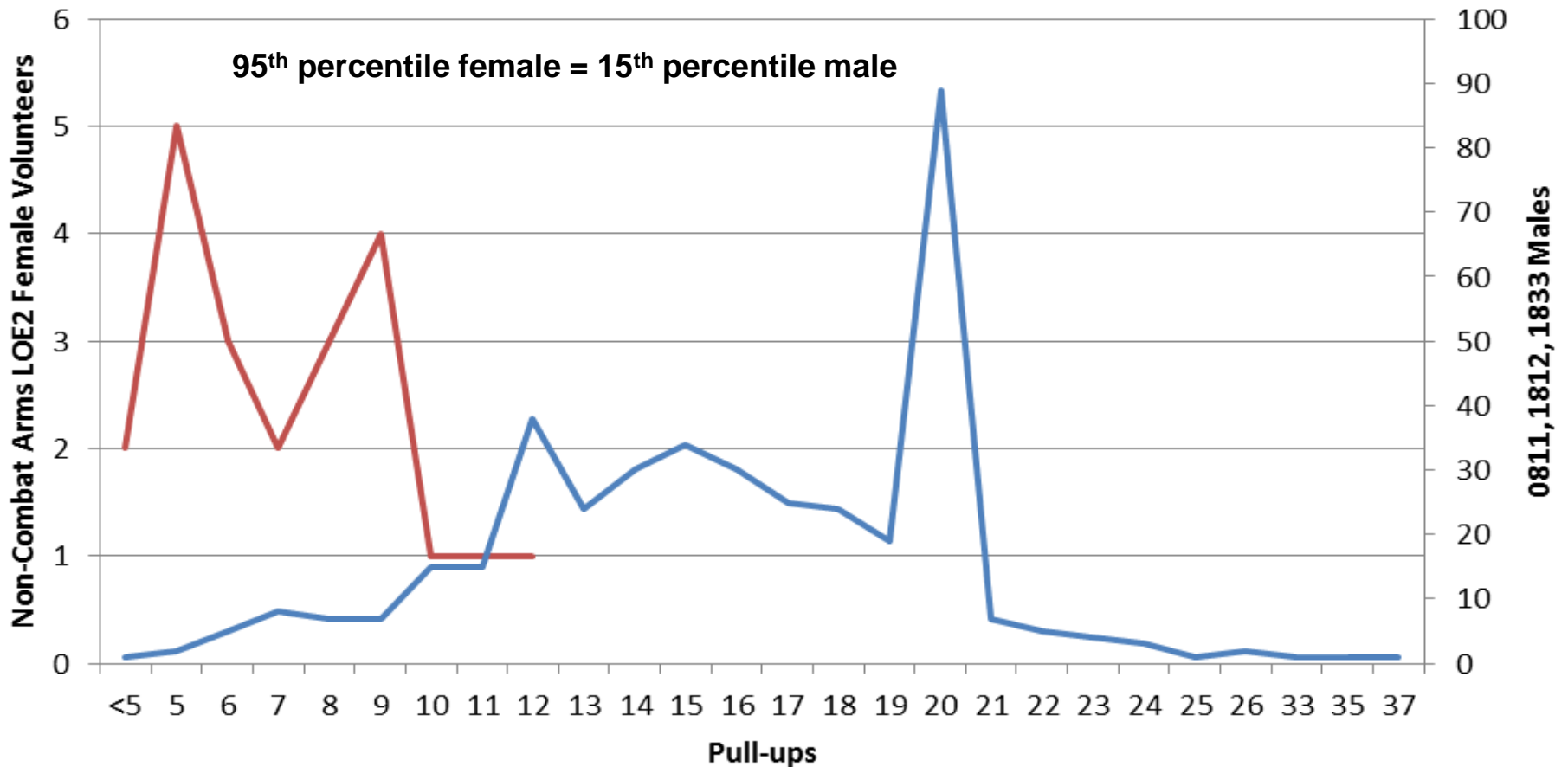
# Combat Arms Final MCRD CFT Scores



Gender	Mean	Median	5 <sup>th</sup>	95 <sup>th</sup>
F	238	236	220	256
M	287	289	265	300



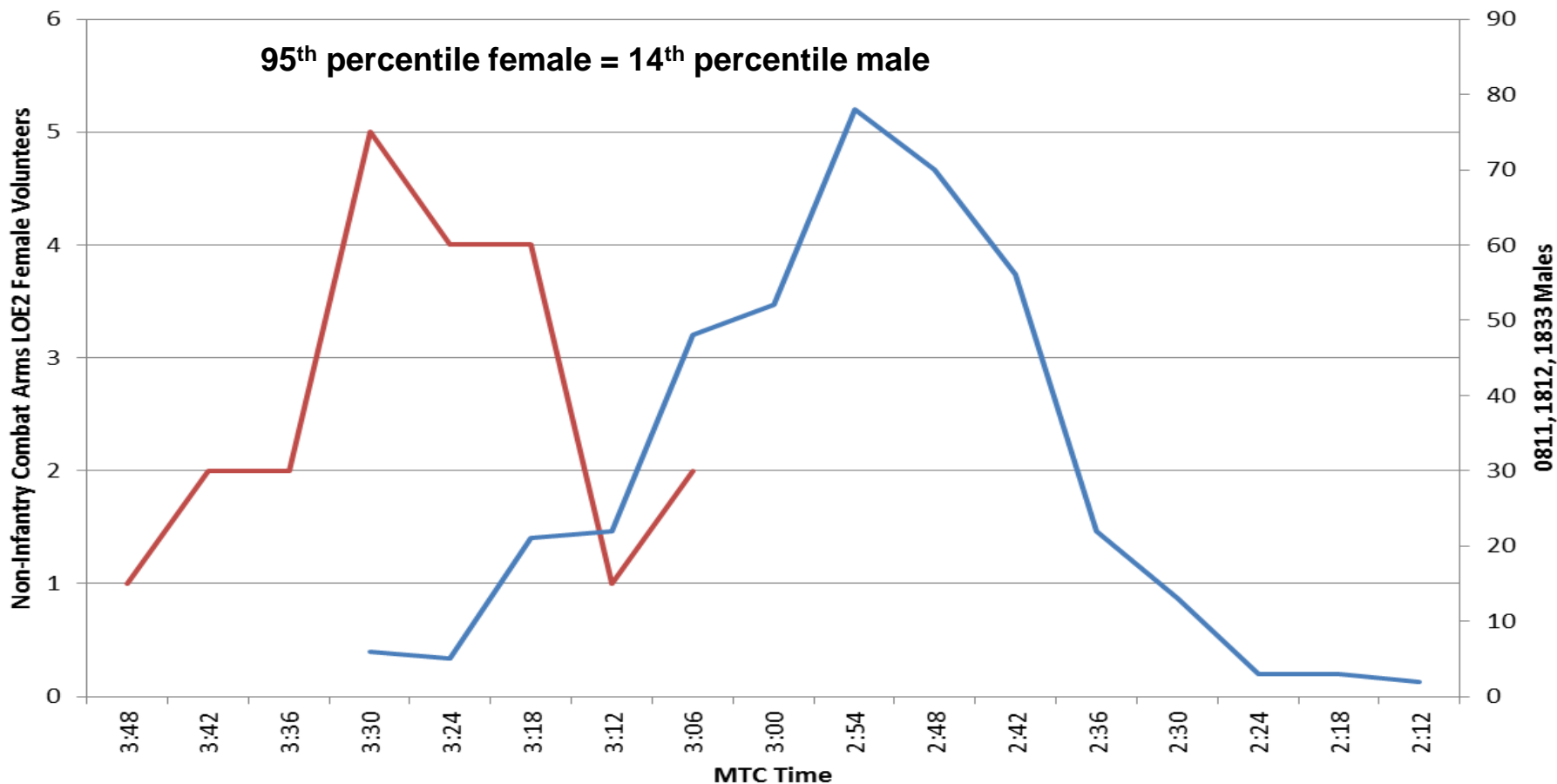
# Combat Arms Final MCRD PFT Pull-ups



Gender	Mean	Median	5 <sup>th</sup>	95 <sup>th</sup>
F	7	7	4	12
M	16	16	8	21



# Combat Arms Final MCRD CFT 'MTC'

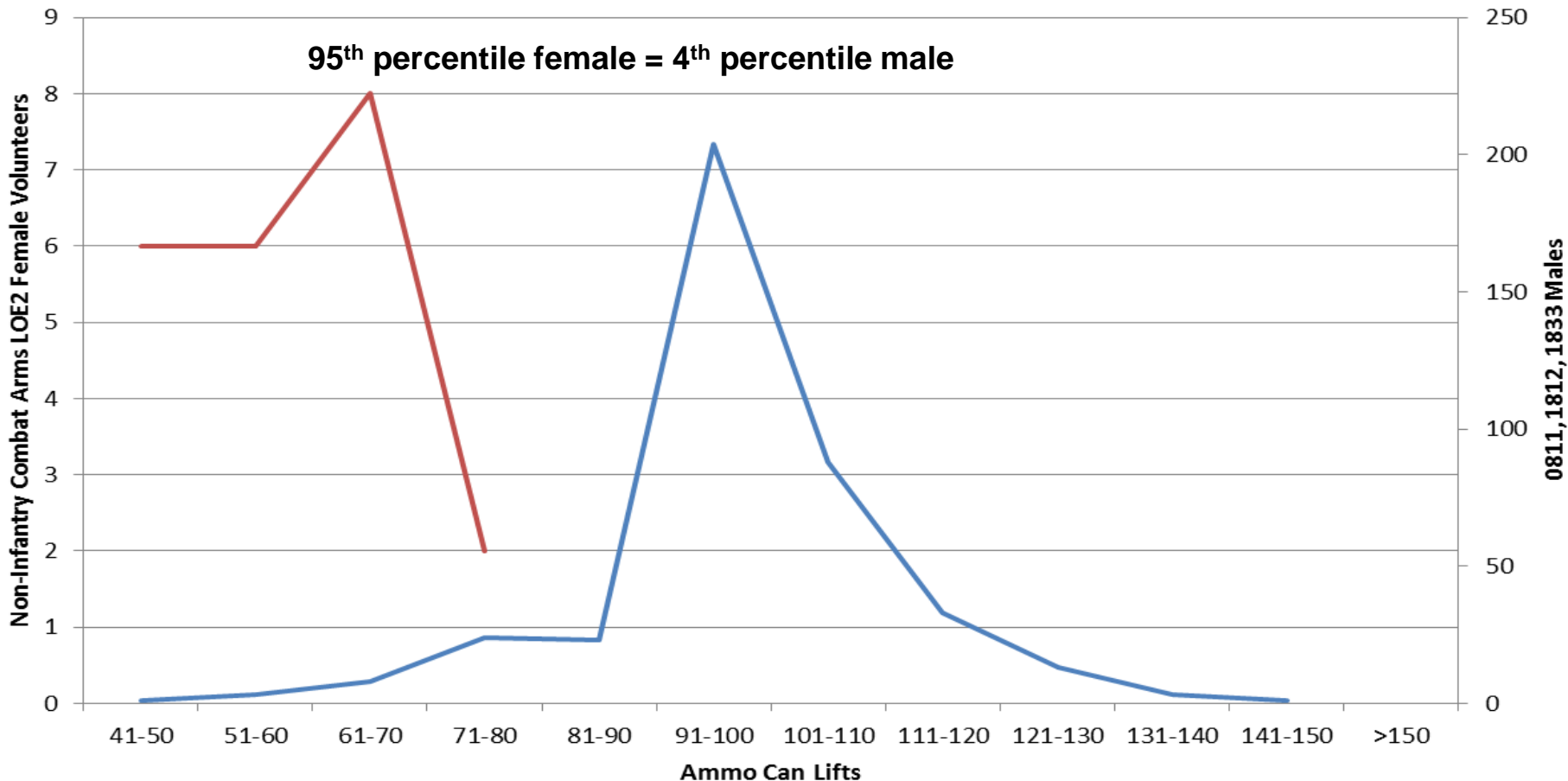


Gender	Mean	Median	5 <sup>th</sup>	95 <sup>th</sup>
F	3:26	3:26	3:41	3:08
M	2:54	2:53	3:16	2:32



# Combat Arms Final MCRD CFT 'AL'

95<sup>th</sup> percentile female = 4<sup>th</sup> percentile male

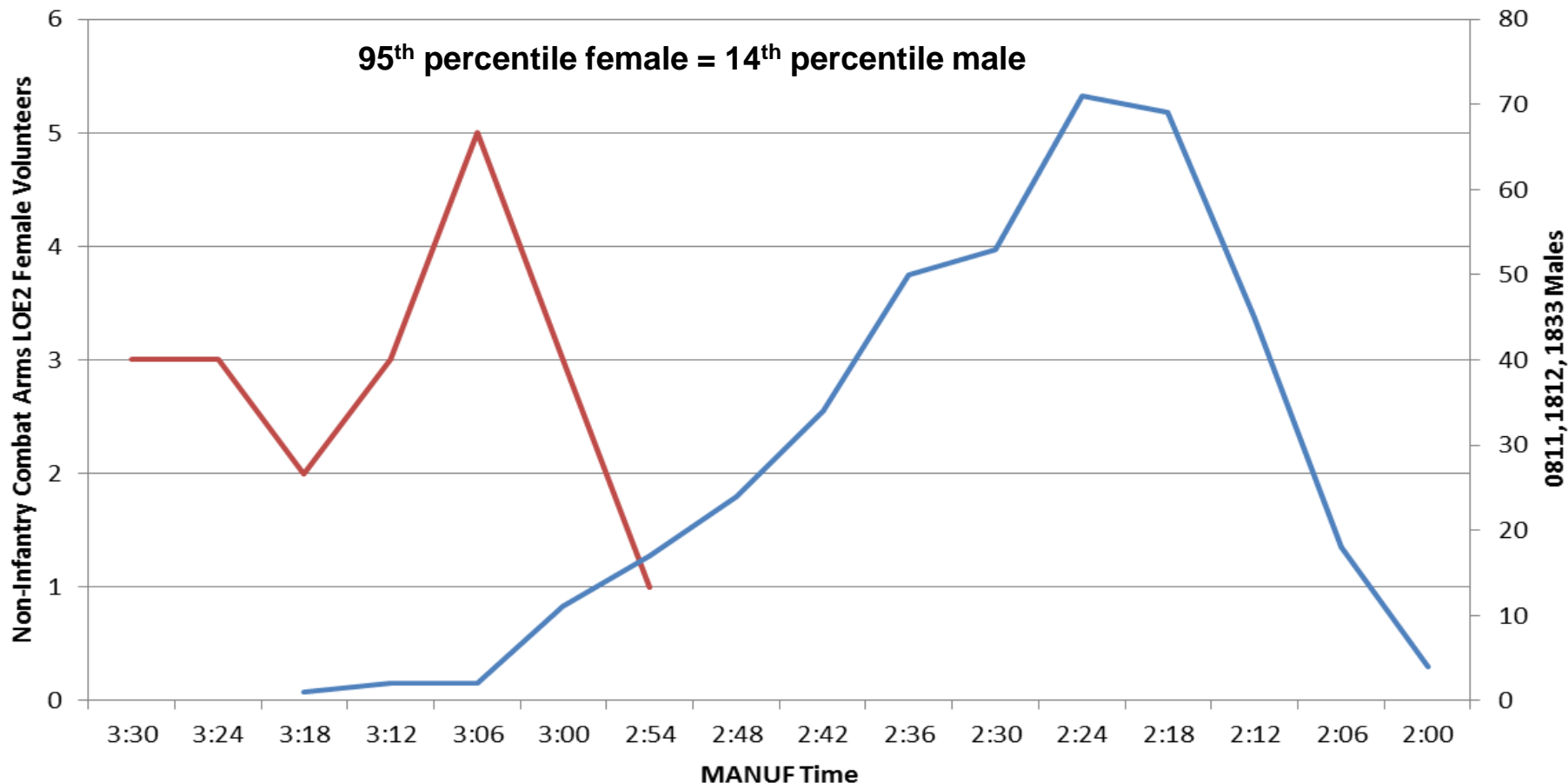


Gender	Mean	Median	5 <sup>th</sup>	95 <sup>th</sup>
F	59	59	45	72
M	98	100	74	120



# Combat Arms Final MCRD 'MANUF'

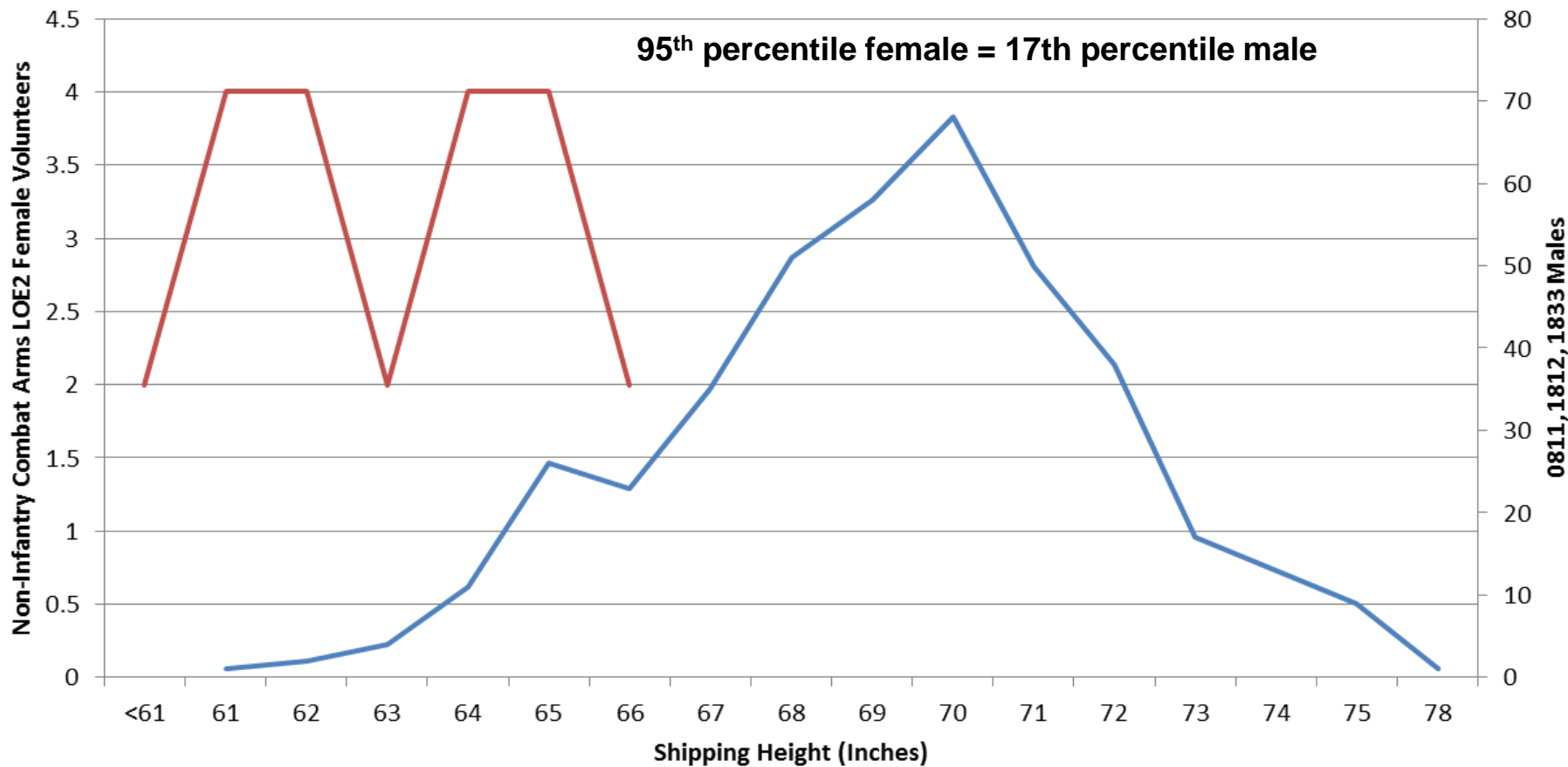
95<sup>th</sup> percentile female = 14<sup>th</sup> percentile male



Gender	Mean	Median	5 <sup>th</sup>	95 <sup>th</sup>
F	3:10	3:07	3:30	2:45
M	2:28	2:26	2:55	2:08



# Combat Arms Shipping Height

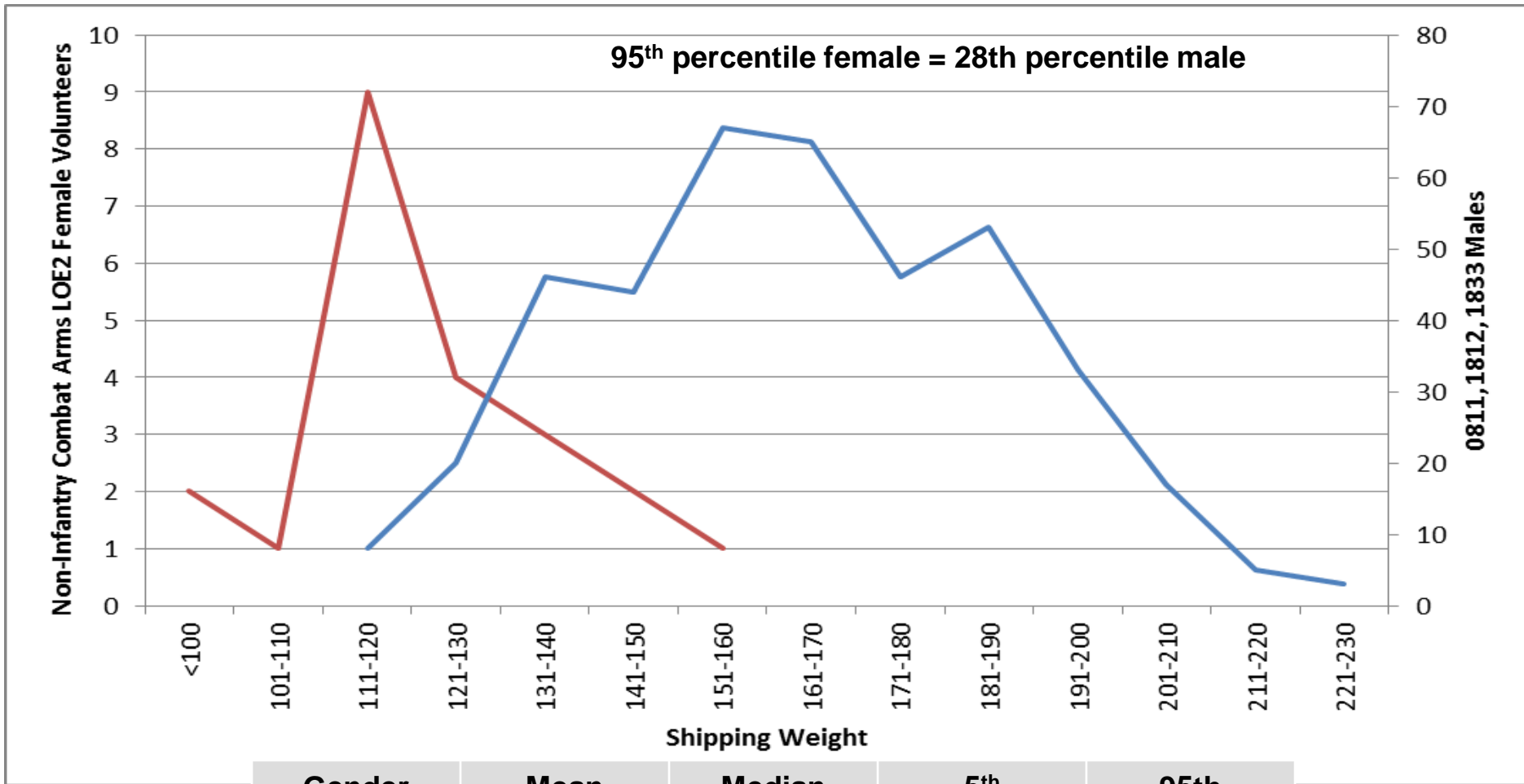


Gender	Mean	Median	5 <sup>th</sup>	95 <sup>th</sup>
F	63	63	59	67
M	69	69	65	74





# Combat Arms Shipping Weight



Gender	Mean	Median	5 <sup>th</sup>	95 <sup>th</sup>
F	123	118	100	150
M	164	164	129	203



# Analysis: Statistical Distribution of LOE 2 Combat Arms Females and Males

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<b>Event</b>	<b>95<sup>th</sup> Percentile Female</b>	<b>% for Male of the 95<sup>th</sup> Percentile Female</b>	<b>95<sup>th</sup> Percentile Male</b>
Pull-ups	12 pull-ups	15 <sup>th</sup> Percentile	21 pull-ups
MTC	3:08	16 <sup>th</sup>	2:32
Ammo Can Lift	72	11 <sup>th</sup>	120
MANUF	2:45	9 <sup>th</sup>	2:08
Final PFT Scores	235	15 <sup>th</sup>	291
Final CFT Scores	256	3 <sup>rd</sup>	300
Shipping Height	67"	24 <sup>th</sup>	74"
Shipping Weight	150 lbs	39 <sup>th</sup>	203 lbs