The *ACE* Gene I/D Polymorphism and Physical Performance Correlations Among Community-Dwelling Older Adults

By

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The *ACE* Gene I/D Polymorphism and Resulting Differential Significant Correlations Between Genotype Groups

By
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Abstract

Angiotensin converting enzyme (ACE) (EC 3.4.15.1) plays a vital role in maintaining blood pressure and cardiovascular health as part of the renin-angiotensin-aldosterone system (RAAS) (Schmieder et al., 2007). ACE functions by cleaving angiotensin I (Ang I) to produce angiotensin II (Ang II), an active vasoconstrictor and important part of RAAS regulation, and also by inactivating brandykinin, a vasodilator (Harrison and Acharya, 2014). A major polymorphism of ACE occurs in intron 16, where there can be an *Alu* sequence inserted, resulting in two different alleles: one containing the insertion (I- insertion) and one without it(D- deletion) (Harrison and Acharya, 2014).

The D allele of ACE has been shown to produce more mRNA than the I allele (Suehiro et al., 2004), while the I/D polymorphism has been linked with nearly half the variance in serum ACE levels between individuals (Rigat et al., 1990). The brain has independent ACE expression, and the I allele has been linked with a 70% increase in ACE promoter transcription in neuro (Wu enst al., 2013). This apparent difference in ACE expression between the brain and the periphery within the same genotype, and the differences in expression between genotypes, likely have an effect on the cardiovascular and musculoskeletal systems where ACE activity is involved. This study attempted to examine these effects through the differential significant correlations of physical performance and strength measurements seen between the genotype groups.

The study involved 88 participants who underwent physical assessments and ACE genotype analysis. The results showed distinct differences in significant correlations between the genotype groups. Balance measure were significantly correlated with strength in the I/I and I/D groups, but not in the D/D group. Stepping also had significant correlations with strength in the I/I and I/D groups not seen in D/D, but significant correlations between gait and strength were seen in I/D and D/D but not I/I. Additionally, the study found a lack of significant correlations between tests like the Sit to Stand (STS) test and strength in the I/I group, and few significant correlations with strength in the D/D, suggesting that the process of administering tests to evaluate strength should consider ACE genotype.

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Introduction

ACE

Angiotensin converting enzyme [(ACE) (EC 3.4.15.1)} is part of the renin-angiotensin-aldosterone system (RAAS), responsible for regulating both the renal and cardiovascular systems (Schmieder et al., 2007). ACE is a dipeptidyl carboxypeptidase, dependent on zinc to remove the C-terminal dipeptide from its substrates and has two homologous domains, the N-domain and the C-domain (Harrison and Acharya, 2014). The domains each have an active site than can often act on the same substrates, but have different chloride ion concentration needs to be effective and can have different activity levels in different locations; the domains share a 60% identity homology, likely due to a gene duplication event which expanded its original function (Masuyer et al., 2014).

Angiotensin I (Ang I) is cleaved by ACE and produces angiotensin II (Ang II), a potent vasoconstrictor which stimulates Angiotensin II type 1 and type 2 receptors (AT1, AT2); ACE also inactivates bradykinin, a vasodialator, and so acts to raise blood pressure with both activities (Harrison and Acharya, 2014). ACE acts on other substrates as well, including some also involved in RAAS (Schmieder et al., 2007), which affects various tissues around the body, including skeletal muscles (Underwood and Adler, 2013). ACE has been shown to be vital for proper fetal development; without membrane bound ACE, kidneys do not develop properly, leading to perinatal death (Michaud et al., 2014). An ACE isoform is also expressed in the testis and is needed for proper male fertility; without its dicarboxypeptidase activity, sperm look and move normally, but are not able to properly participate in reproduction (Masuyer et al., 2014).

The ACE gene has a polymorphism in intron 16, where an *Alu* sequence may be inserted (I) or may be deleted (D), giving rise to three possible genotypes: I/I, I/D, and D/D (Harrison and Acharya, 2014). This polymorphism and the resulting genotypes have been linked to various conditions through hundreds of different studies and have been strongly associated with hypertension, with renal production of Ang II being shown to be necessary for experimental hypertension to develop (Giani et al., 2015) and the absence of intrarenal ACE protecting against the development of hypertension (Gonzalez-Villalobos et al., 2013). While ACE inhibitors protect against various other cardiovascular troubles, such as coronary heart disease and myocardial infarction (Fagyas et al., 2014), no significant link has been found between these diseases and the ACE genotype (Kitsios et al., 2009). The D allele has been found to cause higher levels of mRNA to be produced (Suehiro et al., 2004), and ACE was also more active, producing more Ang II in D/D (Hamdi and Castellon, 2004). While the I/D polymorphism was correlated with and has been found accountable for up to half of ACE serum levels (Rigat et al., 1990), the specific mechanism that accounts for this difference has yet to be elucidated. The D/D genotype has been linked to insulin resistance in type II diabetes (Underwood and Adler, 2013) and a susceptibility to schizophrenia in women (Mazaheri et al., 2015), but has also been shown to be protective against Alzheimer's development because ACE acts to degrade amyloid β-proteins (Hemming et al., 2005; Kehoe, 2009). The D/D and I/D genotypes are both linked to diabetic peripheral neuropathy (Xu et al., 2015), while I/D is linked with rejection of kidney transplants (Huang et al., 2015). The I/I genotype has actually been found to increase cell survival when subjected to slow starvation (Hamdi and Castellon, 2004), manifesting itself as protection against age-related macular degeneration (Hamdi et al., 2002).

Additionally, ACE genotypes have been linked to extreme athleticism, but the results are sometimes conflicting: in elite Israeli athletes, the D allele and D/D genotype were associated with endurance athletes (Amir et al., 2007) while the D allele was linked to elite short distance swimming in Portuguese Olympic swimmers (Costa et al., 2009). The D allele was associated with endurance performance in elite Iranian athletes (Shahmoradi et al., 2014), but in Tunisian athletes, the I allele was associated with endurance and the D allele with power performance (Znazen et al., 2015). The I allele has also been linked with increased heat tolerance during exercise for Caucasian men who were not elite athletes (Heled et al., 2004). These contradictory results hint at the complicated nature of RAAS, ACE, and how they interact with the body in a variety of ways.

Alu Sequences

Human genes are composed of exons and introns that are transcribed to pre-mRNA, before the introns are removed and exons are spliced together. Exons can be spliced, or joined, together in various orders to make different isoforms of the proteins, increasing the possible number of proteins without adding size to the genome (Ram et al., 2008). *Alu* sequences are primate-specific repetitive elements that belong to the SINE (short interspersed elements) family of retrotransposons and are found throughout the genome with 1.07 million copies, 10% of the total genome mass. (Gal-Mark et al., 2008). *Alu* sequences arose from a fusion of the 7SL RNA gene, which produced fossil *Alu* monomers (FAMs). It is thought that two of these FAMs fusing together gave rise to the modern *Alu* structure: related right- and left-arm monomers with an A-rich linker, but with distinct difference, such as a 31 nt insert in the right arm (Hasler and Strub, 2006). Importantly, *Alu* sequences maintain elements from the ancestral 7SL RNA gene- internal A and B boxes of the RNA polymerase III promoter that are weak but functional (Fig. 1). These elements cannot drive efficient *Alu* transcription alone due to significant divergence from consensus, but can be influenced by flanking sequences to promote transcription (Hasler and Strub, 2006). *Alu* RNA itself is thought to play some role in cell metabolism, as its normally low cytosol levels were increased during various stresses and decrease after recovery. Further studies have indicated *Alu* RNA may have a specific role in the regulation of protein translation (Hasler and Strub, 2006).

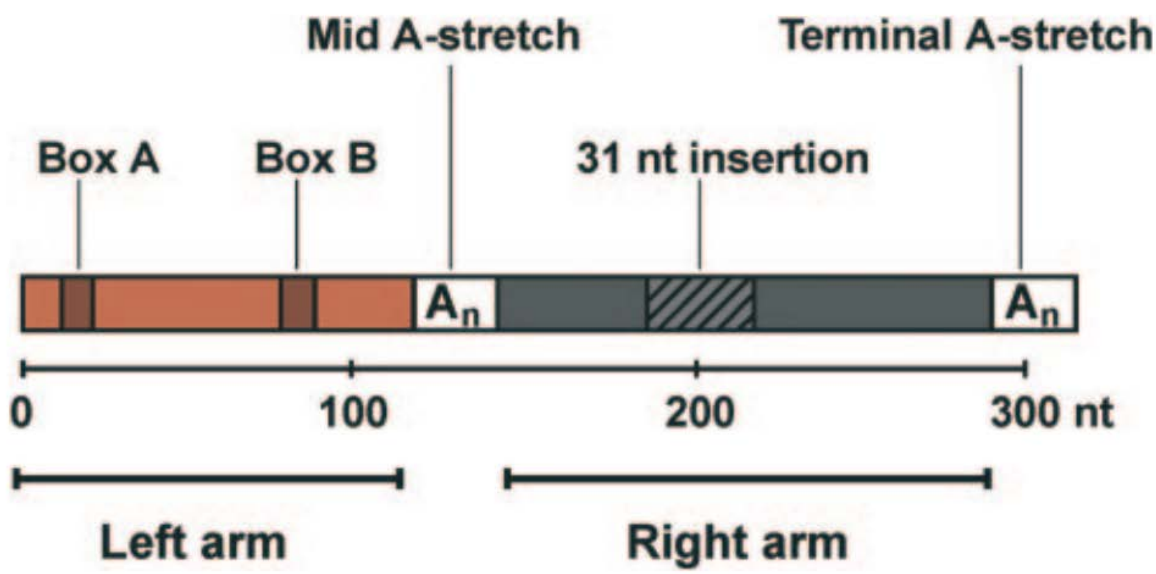

Figure 1 (Hasler and Strub, 2006)

Architecture of *Alu* elements. *Alu* elements are about 300 nt long; they have a dimeric structure composed of two related but not equivalent monomers (left and right arms). The right arm contains a 31 nt insertion as compared to the left arm. Left and right arms are separated by an A-rich region (Mid A-stretch) and followed by a short poly(A) tail (Terminal A-stretch). The left arm contains functional, but weak, A and B boxes of the RNA polymerase III internal promoter.

Alu are short sequences (287 nt) that are composed of a right arm and left arm, which are very similar but with some differences: The left arm contains an internal promoter for RNA polymerase III, while the right arm has a unique 31 bp insert, and they are joined by an A-rich linker, followed by a poly(A) tail (Fig. 2) (Gal-Mark et al., 2008). *Alu* sequences can be inserted in either the antisense or sense orientation, with the antisense most commonly leading to exonization of the right arm of *Alu* and nearby sequences (Gal-Mark et al., 2008). *Alu* exonization plays no small role in human lives, as it accounts for more than 5% of the alternatively spliced internal exons in the genome (Ram et al., 2008). The *Alu* in intron 16 of ACE makes it a good candidate to examine for alternative splicing. *Alu* inserts on their own are not enough to cause exonization, but do so with the help of a few key mutations. The ACE *Alu* insert belongs to the young subfamily Ya5; the older subfamilies *Alu*S/J can undergo exonization with just a single mutation. However, a few more were necessary to cause the ACE *Alu* to alternatively splice, which was also promoted by a specific subset of SR proteins (Lei et al., 2005). Splicing requires specific sequence features that can interact with the spliceosome complex, composed of 5 small nuclear ribonucleoproteins and over 200 proteins (Gal-Mark et al., 2008). The spliceosome recognizes the polypyrimidine tract (PPT), the 5' and 3' splice sites (5'ss and 3'ss) and the branch point sequence (BPS), with *cis*-acting intronic and exonic splicing regulatory elements (ISRs/ESRs) also needed to facilitate the process (Gal-Mark et al., 2008). With the 5'ss and 3'ss of the ACE *Alu* mutated and optimized, exonization leading to alternative splicing can be induced; this can also be done with a single point mutation (G282C) and an overexpression of SR proteins, which interact with ISRs and ESRs (Lei et al., 2005). Although mutations than can induce alternative splicing have been identified, their occurrence has not been studied in populations, and any resulting alternative splicing has not been characterized. Interestingly, deletion of the left arm of the *Alu* sequence changes the exonization of the right arm from alternatively spliced to constitutively spliced, which would be detrimental as the original form and function of the protein was lost (Gal-Mark et al., 2008).

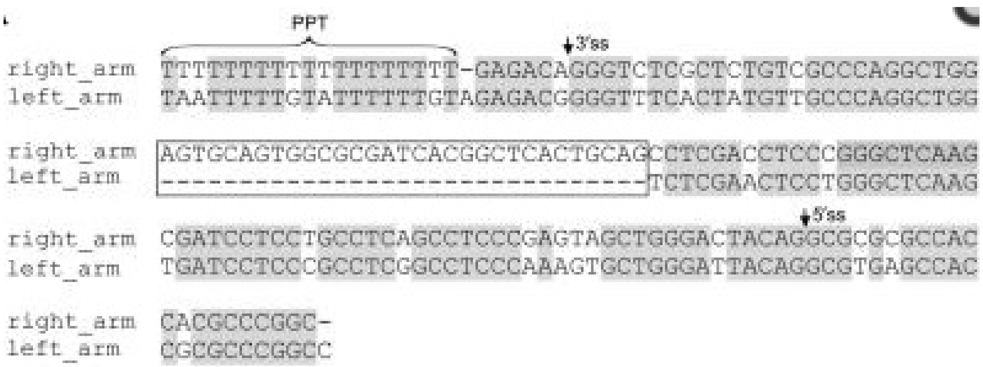

Figure 2 (Gal-Mark et al., 2008)

Alignment of the right and left arm of *Alu* J consensus sequence (gi551536) in its antisense orientation (relative to the mRNA) using the MAVID alignment server. The PPT of the right arm was extended to 19 nt as, on average, the PPT length in exonized *Alu*s is 19 bases ±3 and is marked by horizontal brackets. The major 3′ss and 5′ss that are selected by *Alu* exons are indicated by arrows. Identical sequences are highlighted in gray. The 31-nt sequence that is present only in the right arm is indicated in a box.

ACE Expression and Isoforms

Intron 16 may have effects on transcription as well: an 18 bp sequence has been identified that is highly conserved across species and was a potential binding site transcription factors (TFs) HFH-1, Oct-1, and HNF-3β, although specific interactions have not been studied (Hamilton et al., 2012). The *Alu* sequence in fragments of the I allele was found to have a positive effect on the ACE promoter, increasing its transcriptional activity in neurons by 70% (Wu et al., 2013). However, the promoter and the *Alu* sequences were not in the same orientation as in the ACE gene, so the results should be confirmed by further experiments. Additionally, the brain has a separate ACE expression system (Wu et al., 2013), and so these results may not apply to the ACE expressed in the rest of the body. Other transcriptional regulation has been proposed and ruled out, such as a transcriptional silencer that is missing in the D allele (Rosatto et al., 1999), but the methodology in this and most other studies have some key shortcomings. Often fragments of intron 16 I and D alleles or the *Alu* will be cloned into vectors with reporter genes, but this is missing any interactions caused by the rest of the mRNA and its secondary structure. Animal models that produce ACE are very helpful for studying other aspects, but the *Alu* insert in intron 16 is only found in humans, so all other animals are by default D/D (Hamdi and Castellon, 2004) and thus can't be used to study the I allele effects on splicing. When human ACE (hACE) is used in animal model, it is usually the coding sequence for the protein with the introns already removed; the otherwise over 20,000 bp sequence would be far too large to use with plasmids, and would likely need an artificial chromosome. In the study that looked at how to induce alternative splicing of the ACE *Alu* sequence, only intron 16 or its fragments were cloned into minigenes (Lei at al., 2005), which has the advantage of looking at the complete intron 16, but again loses out on any interactions from the rest of the pre-mRNA that might affect splicing. The I allele has been shown to increase ACE promoter activity by 70% in neuron cells, however this was done using constructed plasmids, not the gene in its natural form (Wu et al., 2013).

There are already two recognized isoforms of ACE, somatic ACE (sACE- 170 kDa) and testis ACE (tACE- 110 kDa), only produced in the testis after puberty and comprised of the C-domain of sACE (Harrison and Acharya, 2014). The ACE gene has 26 exons and 25 introns, with sACE generated by splicing exons 1-12 and 14-26 together, while tACE is made by splicing exons 13-26 together (Masuyer et al., 2014). Along with the N- and C- domains, ACE has a juxtamembrane domain, a transmembrane domain (hydrophobic), and a cytoplasmic region. (Masuyer et al., 2014). Both forms of ACE exist as membrane bound proteins, exposed on the cellular membrane surface as well as on internal membranes (Wang et al., 2015); both can be cleaved by serine proteases called ACE sheddases to become soluble and enter serum (Aragao et al., 2015). This cleavage can occur at different residues, giving different isoforms that can be detected in the blood and urine. Other mutations in the *ACE* gene have also been found to affect shedding and lead to higher ACE plasma levels, and should possibly be considered in future studies looking at the effects of different ACE genotypes (Ehlers et al., 2012).

The low molecular weight (LMW) isoform of soluble ACE is around 65 kDa, and results from the N-domain being cleaved at Ser^{482} in rats and mice (Fig. 5) (Aragao et al., 2015). The complete sACE comprised of both domains can also be released by cleaving at Arg^{1137} (Fig. 3), producing soluble ACE with both the N- and the C-domains (Beldent et al., 1995). ACE undergoes other modifications as well and is extensively glycosylated to ensure correct folding, with 8 of the 10 potential N-glycosylation sites in the N-domain being glycosylated; the C-domain has 7 potential sites, with 3 of them always and 3 others partially glycosylated (Masuyer et al., 2014). If one of those sites was affected by alternative splicing, the mis-folding could lead to incorrect transport or an enzyme without full activity. However, the extensive glycosylation can also make it hard to predict the MW of soluble sACE (150-190 kDa) and other isoforms (Wang et al., 2015). Both of these isoforms, the 65 kDa LMW and 190 kDa sACE, have been isolated in the urine of humans and are associated with normotensive patients, while another 90 kDa form (Fig. 3) has also been found in the urine of patients that have history of hypertension for either themselves or family (Masuyer et al., 2015). This 90 kDa form of the N-domain of ACE is cleaved at a different residue than the 65 kDa form, Pro[629] (Aragao et al., 2015), and is used as a biomarker for hypertension (Maluf-Meiken et al., 2012). Because of this, hypertension would seem to be linked to the D allele.

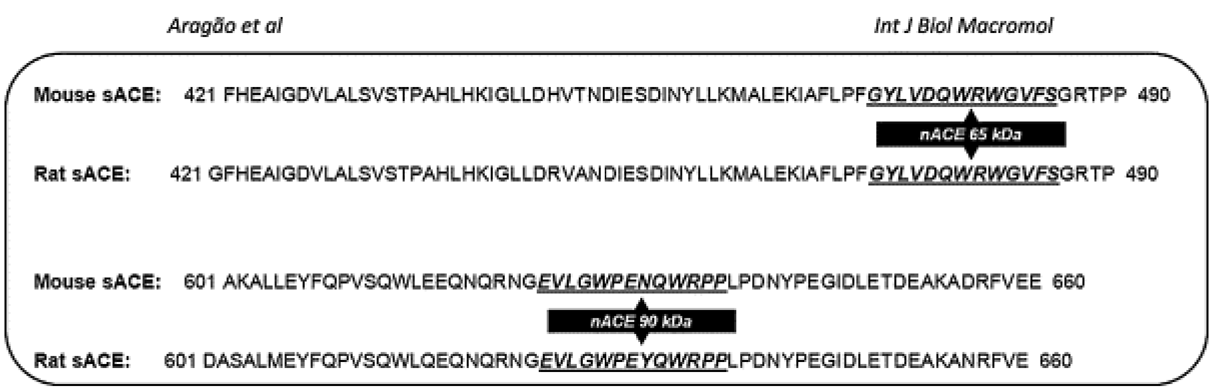

Figure 3 (Aragao et al., 2015)
Sequence alignment of rat (UniProtKB/Swiss-Prot: P47820.1) and mouse (UniProtKB/Swiss-Prot: P09470.3) sACE. The C-terminal alignment of 65 kDa rat nACE ended at Ser[482]. The same analysis for 90 kDa rat nACE showed that the enzyme sequence ended at Pro[629].

ACE plays a multitude of roles throughout the body, interacting with a variety of different systems. ACE is linked with many diseases and conditions, but the strongest is perhaps with hypertension. However, genotype for ACE did not accurately predict response to treatment such as ACE inhibitors (Danser et al., 2007), which can cause difficulty in effectively planning treatments. Additionally, ACE is involved with many processes in the body, long-term treatment could cause other problems, such as inhibiting ACE and removing protection from Alzheimer's that ACE provides by degrading amyloid β-proteins (Hemming and Selkoe, 2005). The associations between ACE genotype and physical condition/ability could potentially lead to tailor-made physical therapies for patients based on how their cardiovascular system responds to exercise and stress based on their ACE genotype. If a link is found, this could also possibly lead to custom physical therapies for the elderly that they will get the most benefit from, done in either a preventative way to retain strength and mobility, or as part of recovery from conditions such as heart attack or stroke. With the broad range of ACE involvement with the cardiovascular system, links to disease like hypertension, Alzheimer's, and schizophrenia, and the vital role ACE plays in male fertility and proper fetal development, knowledge of the effects of the *Alu* I/D polymorphism on protein expression and activity, and how this affects the whole body throughout life, will be essential to understand, diagnose, and treat conditions that involve ACE.

Methods and Materials

Subjects for the study were selected from senior communities in and around Flint, MI. A total of 88 subjects were tested, selected based on the following criteria.

Inclusionary Criteria

Subjects were eligible be included in this project if they meet the following criteria:

1. Age 60 years or more.
2. Able to stand for 10 minutes without human assistance.
3. Able to walk without human assistance with or without an assistive device.

Exclusionary Criteria

Subjects were excluded from this study under the following conditions:

1. Cognitive impairment (ie not alert or oriented and are therefore unable to understand the instructions being provided to them).
2. History of neurological disease e.g. stroke, Parkinson’s disease, or other neurological disease.
3. Self-report of any of the following: cardiopulmonary symptoms such as shortness of breath/fatigue or chest pain with minimal exertion, currently being treated for cancer or that they are in the terminal stages of cancer, currently being treated for an infection, fracture in the past 6 months that would interfere with testing, pain that requires medication and that would interfere with testing.
4. Amputation of a lower extremity. (Goldberg, 2016)

Once selected, saliva samples were collected from subjects using the Oragene DNA OG 500 kit (DNA Genotek, Ottawa, ON, Canada) and stored for later testing at room temperature. Subjects then underwent a series of physical performance tests as follows.

a) Walk a distance of up to 32.5 feet (10 meters) at usual pace and at fast pace to assess walking speeds (Usual Gait Speed- UGS; and Fast Gait Speed- FGS)
b) Push or pull legs against resistance to record muscle strength in pounds/kilograms of hip flexor (Hip Flex), knee extensor (Knee Extension), and ankle dorsi-flexor muscle groups (Ankle Flex)
c) Squeeze a hand-device to record grip strength (Grip Strength)
d) Go from sit to stand and to sit again rapidly 5 times to determine leg function in terms of speed (Sit to Stand- STS)
e) Step as rapidly as possible from one foot pad to another to determine response time (Lower Extremity response time- LE)
f) Step rapidly forward and back again a distance of 18" with one leg up to 30 times (Rapid Step Test- RST)
g) Step as far as possible with preferred leg to determine leg function in terms of distance (Max Step Length- MSL)
h) Perform balance tests- standing on one leg (Single Leg Stand Time- SLST) and stepping in various directions within 4 squares on the floor (Four-Square Step Test- FSST)

DNA was extracted from saliva sample using the PrepIT L2P kit (DNA Genotek, Ottawa, ON, Canada) and provided instructions. Once extracted, the DNA underwent PCR amplification. The primers used flanked the polymorphic DNA segment in intron 16 of the *ACE* gene: forward primer- 5' CTG GAG AGC CAC TCC CAT CCT TTC T 3'; reverse primer- 5' GAC GTG GCC ATC ACA TTC GTC AGA T 3'. The band for the I allele was 478 bp, and the band for the D allele was 191 bp. However, the I allele band will not always show up for I/D individuals. As such, another PCR reaction was performed on samples that showed only a D band (Fig. 4). The same reverse primer was used, but a different forward primer that base-pair matches to the *Alu* insert itself was used, so only I alleles were amplified, resulting in a band of about 450 bp; confirm forward primer- 5' TTT GAG ACG GAG TCT CGC TC 3'. The PCR reaction results were visualized in gels made with 1.5% agarose in 0.5 X TBE.

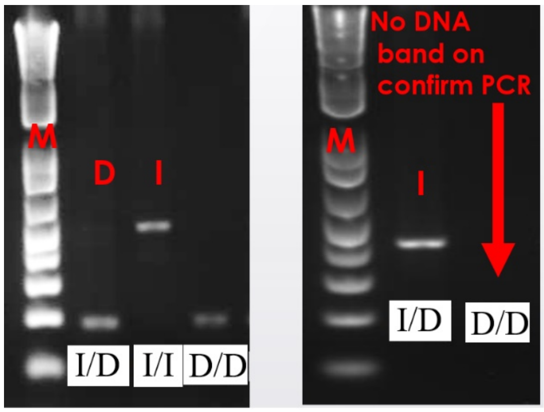

Figure 4
Example of gel results for the ACE I/D polymorphism genotypes. Note that the confirm PCR is necessary to obtain the correct genotype for sample 32. M= Molecular ladder marker; D and I alleles are indicated. Sample 32: I/D genotype; Sample 33: I/I genotype; Sample 34: D/D genotype

Results

A total of 88 individuals participated in the study. The I/D genotype group contained 48 participants with a mean age of 71.1 years old +/- 6.8 years, and was 79% female. The 23 members of the D/D genotype group were 78% female with a mean age of 72.9 years old +/- 10.5 years. The I/I group's 17 members had a mean age of 72.7 years old +/- 7.6 years and were 76% female. The allele frequencies were in Hardy-Weinberg equilibrium. Data was statistically analyzed via SPSS (IBM v. 24). Kruskal-Wallis analysis showed no differences between groups for any of the variables.

Bivariate correlation analysis to compute Spearman's coefficient was performed to determine correlation differences between the variables in the different genotype groups. The physical performance tests used for correlation were Lower Extremity response time- LE (best score), Sit to Stand- STS (best score), Rapid Step Test- RST (best score), Max Step Length- MSL (adjusted for height), Single Leg Stand Time- SLST (best score), Four-Square Step Test- FSST (best score), Usual Gait Speed- UGS (best score), and Fast Gait Speed- FGS (best score). The best score was used as all participants did not complete multiple trials of each test. The strength tests- Hip, Knee, Ankle, and Grip, were adjusted for weight, and were also combined for a Composite Strength score, all of which were analyzed for correlations. Correlations were found between all physical performance and strength measures in the whole sample (Table 1), but the relationships differed within and among the genotype groups.

STS

For the I/D genotype group (Table 2), STS was found to have significant correlations with all the other physical measures mentioned. There was a fair negative relationship between STS and SLST (r= -0.330, p=0.023), Knee Extension (r= -0.472, r= 0.001), Ankle Flex (r= -0.431, p= 0.002), and Grip Strength (r= -0.443, p= 0.002). There were moderate negative relationships between STS and MSL (r= -0.599, p= 9.0 x 10^{-6}), Hip Flex (r= -0.592, p= 1.2 x 10^{-5}), Composite Strength (r= -0.560, p= 4.2 x 10^{-5}), UGS (r= -0.557, p= 4.8 x 10^{-5}), and FGS (r= -0.560, p= 4.2 x 10^{-5}). STS also had moderate positive relationships with LE response time (r= 0.500, p= 3.47 x 10^{-4}) and FSST (r= 0.623, p= 3.0 x 10^{-6}) and a good positive relationship with RST (r=0.718, p= 1.98 x 10^{-8}).

For the D/D genotype group (Table 3), STS had moderate negative relationships with Hip Flex (r= -0.567, p= 0.006), Grip Strength (r= -0.644, p= 0.001), UGS (r= -0.584, p= 0.004) and FGS (r= -0.600, p= 0.003), as well as a fair positive relationship with RST (r= 0.430, p= 0.046) and a moderate positive relationship with LE (r= 0.516, p= 0.014).

In the I/I genotype group (Table 4), STS only had one significant correlation, a moderate negative relationship with UGS (r= -0.539, p=0.026).

LE Response Time

For the D/D genotype group, LE response time had significant correlations with all the physical measures mentioned, as well as a fair positive relationship with being a recurrent faller (r= 0.467, p= 0.025), a relationship not seen in other genotype groups. In fact, in those possessing the D allele (Table 5), LE response time has fair positive relationships with being a recurrent faller (r= 0.236, p= 0.047) and the number of falls in the last 12 months (r= 0.249, p= 0.036). This did not occur with the I allele (Table 6).

For the physical measures in the D/D group, LE response time had fair negative relationships with MSL (r= -0.435, p= 0.038), Knee Extension (r= -0.493, p= 0.017), Ankle Flex (r= -0.419, p= 0.047), and Composite Strength (r= -0.482, p= 0.020). There were moderate negative relationships with SLST (r= -0.569, p= 0.005), Hip Flex (r= -0.541, p= 0.008), and UGS (r= -0.567, p= 0.005), as well as good negative relationships with Grip Strength (r= -0.684, p= 3.21 x 10^{-4}) and FGS (r= -0.697, p= 3.11 x 10^{-4}). There were moderate positive relationships with STS (r= 0.516, p= 0.014), RST (r= 0.645, p= 0.001), and FSST (r= 0.516, p= 0.014).

For the I/D genotype group, significant correlations were found between LE response time and all the physical measures except Ankle Flex. Fair negative relationships occurred with SLST (r= -0.494, p= 3.58 x 10^{-4}), Hip Flex (r= -0.384, p= 0.007), Knee Extension (r= -0.344, p= 0.017), and Composite (r= -0.334, p= 0.020) and Grip Strength (r= -0.457, p= 0.001). Moderate negative relationships were found with MSL (r= -0.622, p= 2.0 x 10^{-6}), UGS (r= -0.525, p= 1.30 x 10^{-4}), and FGS (r= -0.615, p= 3.0 x 10^{-6}). A fair positive relationship was found with FSST (r= 0.479, p= 0.001), a moderate positive relationship with STS (r= 0.500, p= 3.47 x 10^{-4}), and a good positive relationship with RST (r= 0.752, p= 1.14 x 10^{-9}).

For the I/I genotype group, LE response time had moderate negative relationships with Hip Flex (r= -0.574, p= 0.016), Knee Extension (r= -0.529, p= 0.029), Ankle Flex (r= -0.583, p= 0.014), Composite Strength (r= -0.642, p= 0.005), and Grip Strength (r= -0.525, p= 0.031), and a moderate positive relationship with RST (r= 0.547, p= 0.023).

RST

For the I/D and D/D genotype groups, RST had significant correlations with all other physical performance and strength measures. In the D/D genotype group, RST had fair negative relationships with Hip Flex (r= -0.484, p= 0.022), Ankle Flex (r= -0.440, p= 0.041), and Composite Strength (r= -0.495, p= 0.019); moderate negative relationships with MSL (r= -0.508, p= 0.016), SLST (r= -0.523, p= 0.013), Knee Extension (r= -0.531, p= 0.011), and Grip Strength (r= -0.597, p= 0.003); and good negative relationships with

UGS (r = -0.692, p= 3.55 x 10^{-4}) and FGS (r= -0.775, p= 2.3 x 10^{-5}). RST had a fair positive relationship with STS (r= 0.430, p= 0.046), a moderate positive relationship with LE response time (r= 0.645, p= 0.001), and a good positive relationship with FSST (r= 0.730, p= 1.16 x 10^{-4}).

For the I/D group, RST had fair negative relationships with Hip Flex (r= -0.409, p= 0.004), Knee Extension (r= -0.468, p= 0.001), Ankle Flex (r= -0.438, p= 0.002), Composite Strength (r= -0.492, p= 4.41 x 10^{-4}), and Grip Strength (r= -0.472, p= 0.001); moderate negative relationships with SLST (r= -0.552, p= 5.8 x 10^{-5}) and UGS (r= -0.640, p= 1.0 x 10^{-6}); and good negative relationships with MSL (r= -0.759, p= 6.47 x 10^{-10}) and FGS (r= -0.703, p= 3.59 x 10^{-8}). RST had good positive relationships with LE response time (r= 0.752, p= 1.14 x 10^{-9}), STS (r= 0.718, p= 1.98 x 10^{-8}), and FSST (r= 0.704, p= 3.47 x 10^{-8}); RST also had fair positive correlations with BMI (r= 0.432, p= 0.002) and the number of falls in the past 12 months (r= 0.294, p= 0.045) in the I/D group, not seen in other genotypes.

The I/I genotype group had significant correlations between RST and all physical performance and strength measures except STS, as well as a strong positive relationship with fear of falling (FOF) (r= 0.738, p= 0.001), but not with actual falls occurring. In the I/I group, RST had moderate negative relationships with SLST (r= -0.678, p= 0.003), Hip Flex (r= -0.657, p= 0.004), Knee Extension (r= -0.566, p= 0.018), Ankle Flex (r= -0.603, p= 0.010), Composite Strength (r= -0.674, p= 0.003), and Grip Strength (r= -0.512, p= 0.036); a good negative relationship with MSL (r= -0.757, p= 4.30 x 10^{-4}); and excellent negative relationships with UGS (r= -0.896, p= 1.0 x 10^{-6}) and FGS (r= -0.909, p= 4.27 x

10^{-7}). RST also had a moderate positive relationship with LE response time (r= 0.547, p= 0.023) and a good positive relationship with FSST (r= 0.775, p= 2.62 x 10^{-4}).

MSL

The I/D and I/I groups both had significant correlations between MSL and nearly all other measures, while D/D had few MSL correlations. For I/D, significant correlations were found with all strength and physical activity measures. Moderate negative relationships were found with LE response time (r= -0.622, p= 2.0 x 10^{-6}) and STS (r= -0.599, p= 9.0 x 10^{-6}); good negative relationships with RST (r= -0.759, p= 6.47 x 10^{-10}) and FSST (r= -0.706, p= 2.14 x 10^{-8}); fair positive relationships with Hip Flex (r= 0.455, p= 0.001) and Grip Strength (r= 0.463, p= 0.001); moderate positive relationships with SLST (r= 0.609, p= 4.0 x 10^{-6}), Knee Extension (r= 0.503, p= 2.71 x 10^{-4}), Ankle Flex (r= 0.499, p= 3.04 x 10^{-3}), Composite Strength (r= 0.521, p= 1.49 x 10^{-4}), and UGS (r= 0.601, p= 6.0 x 10^{-6}); and a good positive relationship with FGS (r= 0.732, p= 3.49 x 10^{-9}).

The I/I group had significant correlations between MSL and all the same measures except LE response time and STS. Good negative relationships were observed with RST (r= -0.757, p= 4.30 x 10^{-4}) and FSST (r= -0.846, p= 1.9 x 10^{-5}); a fair positive relationship with Ankle Flex (r= 0.485, p= 0.048); moderate positive relationships with Hip Flex (r= 0.618, p= 0.008), Knee Extension (r= 0.498, p= 0.042), Composite Strength (r= 0.569, p= 0.017), Grip Strength (r= 0.510, p= 0.037), and UGS (r= 0.667, p= 0.003); and good positive relationships with SLST (r= 0.805, p= 9.7 x 10^{-5}) and FGS (r= 0.779, p= 2.26 x 10^{-4}).

The D/D genotype group had fewer significant correlations with MSL. A fair negative relationship was found with LE response time (r= -0.435, p= 0.038); moderate negative relationships with RST (r= -0.508, p= 0.016) and FSST (r= -0.634, p= 0.002); a fair positive relationship with UGS (r= 0.446, p= 0.033); and moderate positive relationships with SLST (r= 0.554, p= 0.006) and FGS (r= 0.577, p= 0.005). There were no significant correlations between MSL and any strength measures for the D/D genotype group. This suggests that assessments of lower body strength based on MSL would not be reliable for this group.

SLST

The presence of significant correlations for SLST follow a similar pattern as those of MSL, with no significant correlations with strength measure in the D/D group, while significant correlations existed for all measures in the I/D group and all measures but LE response time, STS, and Grip Strength in the I/I group. In the I/D group, SLST had fair negative relationships with LE response time (r= -0.494, p= 3.58×10^{-4}), STS (r= -0.330, p= 0.023), and FSST (r= -0.458, p= 0.001); a moderate negative relationship with RST (r= -0.552, p= 5.8×10^{-5}); fair positive relationships with Hip Flex (r=0.452 , p= 0.001), Knee Extension (r= 0.369, p= 0.012), Ankle Flex (r= 0.452, p= 0.001), Composite Strength (r= 0.458, p= 0.001), and Grip Strength (r= 0.478, p= 0.001); and moderate positive relationships with MSL (r= 0.609, p= 4.0×10^{-6}), UGS (r= 0.553, p= 4.5×10^{-5}), and FGS (r= 0.533, p= 9.5×10^{-5}).

The I/I group had good negative relationships between SLST and RST (r= -0.678, p= 0.003), and FSST (r= -0.775, p= 2.61×10^{-4}) moderate positive relationships between SLST and Hip Flex (r= 0.533, p= 0.027), Knee Extension (r= 0.569, p= 0.017), Ankle

Flex (r= 0.632, p= 0.006), Composite Strength (r= 0.610, p= 0.009), UGS (r= 0.587, p= 0.013), and FGS (r= 0.617, p= 0.008); and a good positive relationship between SLST and MSL (r= 0.805, p= < 0.001).

For the D/D genotype group, SLST had a fair negative relationship with FSST (r= -0.430, p= 0.046); moderate negative relationships with LE response time (r= -0.569, p= 0.005) and RST (r= -0.523, p= 0.013); moderate positive relationships with MSL (r= 0.554, p= 0.006) and UGS (r= 0.571, p= 0.004); and a good positive relationship with FGS (r= 0.678, p= 0.001).

FSST

The D/D genotype group had fewer significant correlations between FSST and other measures than other groups, lacking significant correlations with any strength measure except for Grip Strength. The was a fair negative relationship found between FSST and SLST (r= -0.430, p= 0.46); moderate negative relationships with MSL (r= -0.634, p= 0.002), Grip Strength (r= -0.543, p= 0.009), and UGS (r= -0.598, p= 0.003); a good negative relationship with FGS (r= -0.710, p= 2.16×10^{-4}); a moderate positive relationship with LE response time (r= 0.516, p= 0.014); and a good positive relationship with RST (r= 0.730, p= 1.16×10^{-4}).

The I/I genotype group had significant correlations between FSST all physical measures except LE response time, STS, Knee Extension, and Ankle Flex. FSST had moderate negative relationships with Hip Flex (r= -0.600, p= 0.011), Composite Strength (r= -0.534, p= 0.027), Grip Strength (r= -0.627, p= 0.007), and UGS (r= -0.645, p= 0.005) in the I/I group. There were also good negative relationships with MSL (r= -0.846, p= 1.9 x 10^{-5}), SLST (r= -0.775, p= 2.61 x 10^{-4}), and FGS (r= -0.733, p= 0.001); and a good positive relationship with RST (r= 0.775, p= 2.62 x 10^{-4}).

In the I/D group, significant correlations were found between FSST and all other physical measures. There were fair negative relationships with SLST (r= -0.548, p= 0.001), Hip Flex (r= -0.425, p= 0.003), Knee Extension (r= -0.450, p= 0.001), Ankle Flex (r= -0.417, p= 0.003), and Grip Strength (r= -0.394, p= 0.006); a moderate negative relationship with Composite Strength (r= -0.497, p= 3.25 x 10^{-4}) and UGS (r= -0.663, p= 2.85 x 10^{-7}; and good negative relationships with MSL (r= -0.706, p= 2.14 x 10^{-8}) and FGS (r= -0.786, p= 3.29 x 10^{-11}). There was also a fair positive relationship between FSST and LE response time (r= 0.479, p= 0.001); a moderate positive relationship with STS (r= 0.623, p= 3.0 x 10^{-6}); and a good positive relationship with RST (r= 0.704, p= 3.47 x 10^{-8}).

UGS and FGS

The significant correlations of UGS and FGS with other physical activity measures have already be covered, but there were also differences in the significant correlations of FGS and UGS with physical strength measures between the genotype groups. In the I/D genotype group, UGS correlated with all the strength measures. A fair positive relationship was observed with Knee Extension (r= 0.464, p= 0.001); and moderate positive relationships with Hip Flex (r= 0.515, p= 1.83 x 10^{-4}), Ankle Flex (r= 0.565, p= 2.9 x 10^{-5}), Composite Strength (r= 0.583, p= 1.3 x 10^{-5}), and Grip Strength (r= 0.604, p= 6.0 x 10^{-6}). FGS also had correlations in the I/D group, showing moderate positive relationships with with Hip Flex (r= 0.534, p= 9.2 x 10^{-5}), Knee Extension (r= 0.507, p= 2.37 x 10^{-4}), Ankle Flex (r= 0.636, p= 1.0 x 10^{-6}), Composite Strength (r=

0.624, p= 2.0 x 10^{-6}), and Grip Strength (r= 0.539, p= 7.7 x 10^{-5}). UGS and FGS also had a good positive relationship with each other (r= 0.811, p= 2.82 x 10^{-12}). Additionally, there were moderate negative relationships between BMI and both UGS (r= -0.532, p= 1.38 x 10^{-4}) and FGS (r= 0.531, p= 1.03 x 10^{-4}) in the I/D group that were not found in other groups.

In the D/D genotype group, FGS had a fair positive relationship with Ankle Strength (r= 0.484, p= 0.023); moderate positive relationships with Hip Flex (r= 0.600, p= 0.003), Knee Extension (r= 0.615, p= 0.002), and Composite Strength (r= 0.550, p= 0.008); and a good positive relationship with Grip Strength (r= 0.689, p= 3.94 x 10^{-4}). For UGS in the D/D group, there was just a fair positive relationship with Composite Strength (r= 0.442, p= 0.035); and moderate positive relationships with Knee Extension (r= 0.546, p= 0.007) and Grip Strength (r= 0.676, p= 4.04 x 10^{-4}). FGS and UGS also had a strong positive correlation with each other (r= 0.869, p= 1.56 x 10^{-7}), but none with BMI.

In the I/I genotype group, there was only a moderate strong relationship between FGS and Hip Strength (r= 0.507, p= 0.038). FGS did not correlate with any other strength measures, and UGS did not correlate with any strength measures at all, although FGS and UGS did correlate with each other with a excellent positive relationship (r= 0.945, p= 1.15 x 10^{-8}).

Other

Additionally, Ankle Flex had fair negative relationships with being a faller (r= -0.312, p= 0.031) and the number of falls in the last 12 months (r= -0.317, p= 0.028) in the I/D genotype group, but not in the other groups.

Discussion

Among the different ACE genotype groups, there were numerous instances of differential correlations among the physical performance and strength measures. When the categories of the measures were considered, some interesting patterns are observed. By taking these disparate relationships into account during physical therapy, and general exercise for older adults, workout regimens that would impart the most benefit could be prescribed to patients based on their ACE genotype. If the goal was to improve or maintain balance, for instance, focusing on strengthening the leg muscles may not be useful for those with a D/D genotype. A previous study found that compared to the D/D genotype, I/I and I/D had weak positive significant interactions with Grip Strength and FGS (Yoshihara et al., 2009). However, in this study no differences were found for any variables between genotypes.

The Lower Extremity (LE) response time test was significantly correlated with balance measures like the Four-Square Step Test (FSST) and the Single Leg Stand Time (SLST) test, as well as to the Max Step Length (MSL) test and the Sit to Stand (STS) test, in the I/D and D/D genotype groups, but not in I/I. When considering the entire sample as a whole, not based on ACE genotype, there were significant correlations with these measures as well. If interventions or further studies were undertaken based on those results, not considering ACE genotypes, it could be wasted effort or cause unreliable results, as the non-correlations in I/I would be affecting the overall results, hiding possible stronger correlations in the other genotypes groups. The lack of correlation between LE response time and other physical performance measures in the I/I group in this study provides evidence that a lack of ACE activity may play a role, as the I allele is associated with less ACE mRNA being produced. This also seems to corroborate previous results which found that for physically active older adults, the I/I genotype group was more likely to develop mobility limitations (Krichevsky et al., 2005)

When considering balance measures themselves like FSST and SLST, differential significant correlations were also seen. SLST had positive significant correlations and FSST had negative significant correlations with all the strength measures (Hip Flex, Knee Extension, Ankle Flex, Composite Strength, and Grip Strength) in the I/D group, indicating strength was linked to better times in each test. In the I/I group, SLST had positive significant correlations with all the strength measures except Grip Strength. FSST had negative significant correlations with all the strength measures except Knee Extension and Ankle Flex, suggesting that strengthening the knees and ankles of those with the I/I genotype may not help balance, but strengthening the hips might lead to balance improvements. These balance measures did not have any significant correlations with any strength measures in the D/D group. This indicates that exercising and strengthening the legs of older individuals may not improve balance if they have the D/D genotype, and this relationship may apply to physical therapy in younger patients as well, although further study would be needed to corroborate this possibility. Interestingly, a previous study found that over the course of 18-months of isokinetic knee strength training, only the D/D showed any improvement, and it was drastic (Giaccaglia et al., 2008). Taken together, the D/D group may respond better to certain types of training than the other groups, but this may not necessarily improve balance. Since the D allele is associated with more mRNA being produced and the D/D genotype is linked with more activated Ang II, this seems to suggest that ACE activity and involved pathways have a complex relationship with balance, lower body strength, and their correlations. Future studies should examine this relationship and mechanisms involved.

MSL, UGS, and FGS were all significantly correlated with the strength measures when considering the complete sample. However, the relationships were more complex when considering ACE genotype. MSL had positive correlations with all the strength measures in the I/I and I/D groups, but no correlations in the D/D group. However, FGS had positive significant correlations with all the strength measure in I/D and D/D, but only with Hip Flex in I/I. UGS had positive significant correlations with all strength measures in I/D and with all strength measures except Hip Flex and Ankle Flex in D/D, but there were no significant correlations with strength measures in I/I. If examining stepping and gait, either in a study or as part of physical therapy, not taking ACE genotype into account could muddle results, perhaps severely, especially if strength was being considered as well. In physical therapy, focusing on strength to improve stepping and gait could have vastly different effects depending on ACE genotype, as stepping and gait themselves relate to each other differently depending on genotype. Additionally, future studies could examine the role ACE activity plays, as the lack of correlations of MSL with strength in the D/D group and of UGS and FGS with strength in the I/I group suggest unknown mechanisms at play.

The differential significant correlations also call into question the usefulness and validity of some tests. For instance, the STS test had various significant correlations with the other measures in the complete sample and in the I/D group, such as negative significant correlations with the strength measures, indicating strength was associated with shorter times for the test. However, there were only significant correlations with Hip Flex and Grip Strength in D/D, and no significant correlations with any strength measures in I/I. This seems to indicate that for those with the I/I genotype, the STS test may be less useful for evaluating strength than for those with other genotypes. Additionally, STS had various significant correlations with MSL, SLST, FSST, UGS, and FGS in the complete sample and the I/D group, but only significant correlations with UGS in I/I and with UGS and FGS in D/D. This suggests that physical therapy, especially in older adults, should be tailored to patients based on their ACE genotype to obtain the best results.

The differential significant correlations among the ACE genotype groups suggest that for elderly patients, and perhaps for others, exercise and physical therapy should be tailored to ACE genotype. With the complex role ACE plays in the musculoskeletal and cardiovascular systems, it is not hard to imagine that different cardiovascular and muscular responses during and after activity due to genotype could have measurable effects. Without considering these effects, physical therapies may not have the desired effect, or could even be detrimental. Lack of significant correlations, for instance between strength measures and balance or gait measures, suggest that physical therapies focusing on improving those measures or using them in evaluations may be flawed without realizing it. When studies use entire groups, not considering genotypes such as for ACE, the results may be flawed, which can lead to real-world detriments for patients.

Though this study was limited by its small size and must be expanded for anything definitive to be concluded, the results hint at the complex interplays of various genes with physical health and exercise that are only now being considered. This study also only looked at a single polymorphism in the *ACE* gene, the *Alu* insertion, though others do exist, some of which are known to affect ACE serum levels. It was also limited by only looking at ACE genotype and not ACE expression or serum levels.

Studies in the future should take other ACE polymorphisms into account as well, as those could cause different effects from the I and D ACE alleles. Future studies could also look at serum levels of ACE and its activity levels. This could be done before and after exercise in order to examine not only the differences in serum levels between genotypes, but also the differences in serum level response to exercise between genotypes, leading to better understanding of how the genotypes react to exercise. Similar studies should also be carried out for all age groups, not only the elderly, to see if similar relationships exist. Additionally, future studies should attempt to elucidate the role of ACE activity and the mechanism at play hinted at in the correlations. When the I/I or D/D groups lack correlations seen elsewhere, this suggests that too much or too little ACE activity may be playing a role. Understanding the role of ACE is important not only for physical therapy and exercise, but also for knowing how patients may react to medications such as ACE inhibitors, especially when they may be taken over long periods of time. If inhibiting ACE activity may be having long term physical effects on the cardiovascular and musculoskeletal systems, it is something that should be known and taken into account before prescriptions are given. Though limited, this study was able to show that the relationships between physical performance and strength measures differ based on ACE genotype, indicating an appealing area for future research.

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Table 1- Whole Sample (Significant correlations are highlighted)

			Age (yrs)	Height_meter	Weight_Kg	BMI	Recurrent Faller	Number of falls past 12 months	Faller	FOF	LE_ResponseTime Best	STS_Best	RST_Best	MSL_Best_AdjHeight	SLST_Best	FSST_Best	Best_HipFlx_Dominant_AdjWeight	Best_KnExt_Dominant_AdjWeight	Best_AnkDorFlx_Dominant_AdjWeight	Composite_Strength_AdjWeight	Best_Grip_Dominant_AdjWeight	Best_UGS	Best_FGS
Spearman's rho	LE_ResponseTime Best	Correlation Coefficient	.455**	-.255*	.079	.220*	.214*	.214*	.172	.291**	1.000	.524**	.699**	-.533**	-.500**	.481**	-.462**	-.432**	-.336**	-.439**	-.493**	-.539**	-.619**
		Sig. (2-tailed)	.000	.017	.462	.039	.045	.046	.109	.006	.	.000	.000	.000	.000	.000	.000	.000	.001	.000	.000	.000	.000
		N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
	STS_Best	Correlation Coefficient	.240*	.028	.314**	.341**	.035	.078	.076	.276*	.524**	1.000	.612**	-.513**	-.376**	.534**	-.537**	-.459**	-.427**	-.507**	-.456**	-.574**	-.557**
		Sig. (2-tailed)	.026	.799	.003	.001	.750	.478	.489	.010	.000	.	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
		N	86	86	86	86	86	86	86	86	86	86	85	86	86	86	86	86	86	86	86	86	86
	RST_Best	Correlation Coefficient	.402**	-.242*	.203	.323**	.280**	.244*	.191	.293**	.699**	.612**	1.000	-.709**	-.560**	.728**	-.455**	-.524**	-.480**	-.535**	-.481**	-.684**	-.743**
		Sig. (2-tailed)	.000	.025	.060	.002	.009	.024	.078	.006	.000	.000	.	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
		N	86	86	86	86	86	86	86	86	86	85	86	86	86	86	86	86	86	86	86	86	86
	MSL_Best_AdjHeight	Correlation Coefficient	-.362**	.254*	-.136	-.276**	-.165	-.152	-.123	-.324**	-.533**	-.513**	-.709**	1.000	.626**	-.720**	.394**	.481**	.438**	.468**	.405**	.572**	.711**
		Sig. (2-tailed)	.001	.017	.205	.009	.124	.158	.252	.002	.000	.000	.000	.	.000	.000	.000	.000	.000	.000	.000	.000	.000
		N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
	SLST_Best	Correlation Coefficient	-.477**	.211*	-.230*	-.376**	-.330**	-.318**	-.279**	-.337**	-.500**	-.376**	-.560**	.626**	1.000	-.524**	.405**	.387**	.453**	.437**	.475**	.552**	.549**
		Sig. (2-tailed)	.000	.048	.031	.000	.002	.003	.008	.001	.000	.000	.000	.000	.	.000	.000	.000	.000	.000	.000	.000	.000
		N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
	FSST_Best	Correlation Coefficient	.377**	-.221*	.130	.279**	.249*	.220*	.173	.258*	.481**	.534**	.728**	-.720**	-.524**	1.000	-.415**	-.459**	-.431**	-.470**	-.446**	-.653**	-.768**
		Sig. (2-tailed)	.000	.040	.229	.009	.020	.041	.109	.016	.000	.000	.000	.000	.000	.	.000	.000	.000	.000	.000	.000	.000

		N	87	87	87	87	87	87	87	87	87	86	86	87	87	87	87	87	87	87	87	87	87
	Best_HipFlx_Dominant_AdjWeight	Correlation Coefficient	-.057	-.014	-.564**	-.631**	-.203	-.269*	-.253*	-.383**	-.462**	-.537**	-.455**	.394**	.405**	-.415**	1.000	.712**	.666**	.857**	.639**	.472**	.500**
		Sig. (2-tailed)	.597	.898	.000	.000	.058	.011	.018	.000	.000	.000	.000	.000	.000	.000	.	.000	.000	.000	.000	.000	.000
		N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
	Best_KnExt_Dominant_AdjWeight	Correlation Coefficient	-.084	-.091	-.530**	-.527**	-.148	-.115	-.080	-.315**	-.432**	-.459**	-.524**	.481**	.387**	-.459**	.712**	1.000	.766**	.933**	.521**	.483**	.504**
		Sig. (2-tailed)	.439	.397	.000	.000	.169	.284	.459	.003	.000	.000	.000	.000	.000	.000	.000	.	.000	.000	.000	.000	.000
		N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
	Best_AnkDorFlx_Dominant_AdjWeight	Correlation Coefficient	-.078	-.005	-.589**	-.622**	-.188	-.204	-.178	-.278**	-.336**	-.427**	-.480**	.438**	.453**	-.431**	.666**	.766**	1.000	.883**	.592**	.475**	.537**
		Sig. (2-tailed)	.468	.964	.000	.000	.079	.057	.097	.009	.001	.000	.000	.000	.000	.000	.000	.000	.	.000	.000	.000	.000
		N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
	Composite_Strength_AdjWeight	Correlation Coefficient	-.064	-.043	-.601**	-.638**	-.175	-.188	-.160	-.359**	-.439**	-.507**	-.535**	.468**	.437**	-.470**	.857**	.933**	.883**	1.000	.625**	.525**	.565**
		Sig. (2-tailed)	.554	.691	.000	.000	.103	.079	.137	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.	.000	.000	.000
		N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
	Best_Grip_Dominant_AdjWeight	Correlation Coefficient	-.231*	.384**	-.317**	-.563**	-.241*	-.246*	-.222*	-.353**	-.493**	-.456**	-.481**	.405**	.475**	-.446**	.639**	.521**	.592**	.625**	1.000	.543**	.491**
		Sig. (2-tailed)	.031	.000	.003	.000	.024	.021	.037	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.	.000	.000
		N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
	Best_UGS	Correlation Coefficient	-.403**	.253*	-.226*	-.370**	-.172	-.124	-.087	-.357**	-.539**	-.574**	-.684**	.572**	.552**	-.653**	.472**	.483**	.475**	.525**	.543**	1.000	.837**
		Sig. (2-tailed)	.000	.018	.034	.000	.109	.249	.421	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.	.000
		N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
	Best_FGS	Correlation Coefficient	-.425**	.288**	-.260*	-.423**	-.169	-.131	-.087	-.370**	-.619**	-.557**	-.743**	.711**	.549**	-.768**	.500**	.504**	.537**	.565**	.491**	.837**	1.000
		Sig. (2-tailed)	.000	.007	.015	.000	.117	.227	.424	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.
		N	87	87	87	87	87	87	87	87	87	86	86	87	87	87	87	87	87	87	87	87	87

Table 2- I/D Genotype Group (Significant correlations are highlighted)

Spearman's rho			Age (yrs)	Height_meter	Weight_Kg	BMI	Recurrent Faller	Number of falls past 12 months	Faller	FOF	LE_ResponseTime Best	STS_Best	RST_Best
	LE_ResponseTime Best	Correlation Coefficient	.640**	-.323*	.228	.317*	.137	.245	.242	.109	1.000	.500**	.752**
		Sig. (2-tailed)	.000	.025	.120	.028	.352	.093	.097	.460	.	.000	.000
		N	48	48	48	48	48	48	48	48	48	47	47
	STS_Best	Correlation Coefficient	.264	-.012	.388**	.413**	.065	.147	.152	.240	.500**	1.000	.718**
		Sig. (2-tailed)	.073	.938	.007	.004	.666	.324	.306	.104	.000	.	.000
		N	47	47	47	47	47	47	47	47	47	47	46
	RST_Best	Correlation Coefficient	.616**	-.282	.356*	.432**	.230	.294*	.264	.214	.752**	.718**	1.000
		Sig. (2-tailed)	.000	.055	.014	.002	.121	.045	.073	.149	.000	.000	.
		N	47	47	47	47	47	47	47	47	47	46	47
	MSL_Best_AdjHeight	Correlation Coefficient	-.434**	.241	-.368*	-.472**	-.109	-.142	-.134	-.311*	-.622**	-.599**	-.759**
		Sig. (2-tailed)	.002	.099	.010	.001	.461	.337	.364	.031	.000	.000	.000
		N	48	48	48	48	48	48	48	48	48	47	47
	SLST_Best	Correlation Coefficient	-.619**	.173	-.411**	-.488**	-.376**	-.380**	-.314*	-.226	-.494**	-.330*	-.552**
		Sig. (2-tailed)	.000	.240	.004	.000	.008	.008	.030	.122	.000	.023	.000
		N	48	48	48	48	48	48	48	48	48	47	47
	FSST_Best	Correlation Coefficient	.460**	-.160	.320*	.419**	.137	.152	.120	.278	.479**	.623**	.704**

Spearman's rho			MSL_Best_AdjHeight	SLST_Best	FSST_Best	Best_HipFlx_Dominant_AdjWeight	Best_KnExt_Dominant_AdjWeight	Best_AnkDorFlx_Dominant_AdjWeight	Composite_Strength_AdjWeight	Best_Grip_Dominant_AdjWeight	Best_UGS	Best_FGS
	LE_ResponseTime Best	Correlation Coefficient	-.622**	-.494**	.479**	-.384**	-.344*	-.244	-.334*	-.457**	-.525**	-.615**
		Sig. (2-tailed)	.000	.000	.001	.007	.017	.094	.020	.001	.000	.000
		N	48	48	48	48	48	48	48	48	48	48
	STS_Best	Correlation Coefficient	-.599**	-.330*	.623**	-.592**	-.472**	-.431**	-.560**	-.443**	-.557**	-.560**
		Sig. (2-tailed)	.000	.023	.000	.000	.001	.002	.000	.002	.000	.000
		N	47	47	47	47	47	47	47	47	47	47
	RST_Best	Correlation Coefficient	-.759**	-.552**	.704**	-.409**	-.468**	-.438**	-.492**	-.472**	-.640**	-.703**
		Sig. (2-tailed)	.000	.000	.000	.004	.001	.002	.000	.001	.000	.000
		N	47	47	47	47	47	47	47	47	47	47
	MSL_Best_AdjHeight	Correlation Coefficient	1.000	.609**	-.706**	.455**	.503**	.499**	.521**	.463**	.601**	.732**
		Sig. (2-tailed)	.	.000	.000	.001	.000	.000	.000	.001	.000	.000
		N	48	48	48	48	48	48	48	48	48	48
	SLST_Best	Correlation Coefficient	.609**	1.000	-.458**	.452**	.360*	.452**	.458**	.478**	.553**	.533**
		Sig. (2-tailed)	.000	.	.001	.001	.012	.001	.001	.001	.000	.000
		N	48	48	48	48	48	48	48	48	48	48
	FSST_Best	Correlation Coefficient	-.706**	-.458**	1.000	-.425**	-.450**	-.417**	-.497**	-.394**	-.663**	-.786**

	Sig. (2-tailed)	.001	.277	.027	.003	.352	.302	.415	.056	.001	.000	.000	.000	.001	.	.003	.001	.003	.000	.006	.000	.000
	N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
Best_HipFlx_Dominant_AdjWeight	Correlation Coefficient	-.192	.036	-.578**	-.654**	-.129	-.227	-.239	-.397**	-.384**	-.592**	-.409**	.455**	.452**	-.425**	1.000	.660**	.620**	.841**	.625**	.515**	.534**
	Sig. (2-tailed)	.190	.806	.000	.000	.382	.121	.101	.005	.007	.000	.004	.001	.001	.003	.	.000	.000	.000	.000	.000	.000
	N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
Best_KnExt_Dominant_AdjWeight	Correlation Coefficient	-.244	-.087	-.643**	-.623**	-.101	-.149	-.146	-.351*	-.344*	-.472**	-.468**	.503**	.360*	-.450**	.660**	1.000	.693**	.901**	.457**	.464**	.507**
	Sig. (2-tailed)	.095	.555	.000	.000	.495	.312	.322	.015	.017	.001	.001	.000	.012	.001	.000	.	.000	.000	.001	.001	.000
	N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
Best_AnkDorFlx_Dominant_AdjWeight	Correlation Coefficient	-.284	.140	-.663**	-.735**	-.202	-.317*	-.312*	-.301*	-.244	-.431**	-.438**	.499**	.452**	-.417**	.620**	.693**	1.000	.861**	.611**	.565**	.636**
	Sig. (2-tailed)	.051	.342	.000	.000	.169	.028	.031	.038	.094	.002	.002	.000	.001	.003	.000	.000	.	.000	.000	.000	.000
	N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
Composite_Strength_AdjWeight	Correlation Coefficient	-.276	.043	-.675**	-.734**	-.149	-.253	-.254	-.390**	-.334*	-.560**	-.492**	.521**	.458**	-.497**	.841**	.901**	.861**	1.000	.618**	.583**	.624**
	Sig. (2-tailed)	.057	.774	.000	.000	.311	.083	.081	.006	.020	.000	.000	.000	.001	.000	.000	.000	.000	.	.000	.000	.000
	N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
Best_Grip_Dominant_AdjWeight	Correlation Coefficient	-.364*	.437**	-.440**	-.677**	-.258	-.319*	-.291*	-.361*	-.457**	-.443**	-.472**	.463**	.478**	-.394**	.625**	.457**	.611**	.618**	1.000	.604**	.539**
	Sig. (2-tailed)	.011	.002	.002	.000	.076	.027	.045	.012	.001	.002	.001	.001	.001	.006	.000	.001	.000	.000	.	.000	.000
	N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
Best_UGS	Correlation Coefficient	-.526**	.385**	-.331*	-.523**	-.165	-.131	-.081	-.362*	-.525**	-.557**	-.640**	.601**	.553**	-.663**	.515**	.464**	.565**	.583**	.604**	1.000	.811**
	Sig. (2-tailed)	.000	.007	.021	.000	.261	.375	.583	.011	.000	.000	.000	.000	.000	.000	.000	.001	.000	.000	.000	.	.000
	N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
Best_FGS	Correlation Coefficient	-.584**	.304*	-.396**	-.531**	-.095	-.144	-.126	-.324*	-.615**	-.560**	-.703**	.732**	.533**	-.786**	.534**	.507**	.636**	.624**	.539**	.811**	1.000
	Sig. (2-tailed)	.000	.036	.005	.000	.521	.330	.392	.025	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.
	N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48

Table 3- D/D Genotype Group

(Significant correlations are highlighted)

			Age (yrs)	Height_meter	Weight_Kg	BMI	Recurrent Faller	Number of falls past 12 months	Faller	FOF	LE_ResponseTime Best	STS_Best	RST_Best	MSL_Best_AdjHeight	SLST_Best	FSST_Best	Best_HipFlx_Dominant_AdjWeight	Best_KnExt_Dominant_AdjWeight	Best_AnkDorFlx_Dominant_AdjWeight	Composite_Strength_AdjWeight	Best_Grip_Dominant_AdjWeight	Best_UGS	Best_FGS
Spearman's rho	LE_ResponseTime Best	Correlation Coefficient	.528**	-.351	-.133	.043	.467*	.252	.191	.509*	1.000	.516*	.645**	-.435*	-.569**	.516*	-.541**	-.493*	-.419*	-.482*	-.684**	-.567**	-.697**
		Sig. (2-tailed)	.010	.101	.545	.844	.025	.246	.383	.013	.	.014	.001	.038	.005	.014	.008	.017	.047	.020	.000	.005	.000
		N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
	STS_Best	Correlation Coefficient	.420	.049	.241	.286	.073	.162	.154	.260	.516*	1.000	.430*	-.297	-.314	.379	-.567**	-.360	-.277	-.406	-.644**	-.584**	-.600**
		Sig. (2-tailed)	.052	.828	.279	.197	.747	.471	.494	.242	.014	.	.046	.180	.155	.082	.006	.099	.211	.061	.001	.004	.003
		N	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
	RST_Best	Correlation Coefficient	.376	-.237	-.009	.147	.407	.128	.060	.223	.645**	.430*	1.000	-.508*	-.523*	.730**	-.484*	-.531*	-.440*	-.495*	-.597**	-.692**	-.775**
		Sig. (2-tailed)	.084	.288	.968	.513	.060	.571	.791	.319	.001	.046	.	.016	.013	.000	.022	.011	.041	.019	.003	.000	.000
		N	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
	MSL_Best_AdjHeight	Correlation Coefficient	-.484*	.408	.241	.147	-.272	-.140	-.111	-.079	-.435*	-.297	-.508*	1.000	.554**	-.634**	.225	.390	.216	.243	.325	.446*	.577**
		Sig. (2-tailed)	.019	.053	.267	.503	.208	.525	.613	.719	.038	.180	.016	.	.006	.002	.301	.066	.321	.264	.130	.033	.005
		N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
	SLST_Best	Correlation Coefficient	-.430*	.465*	.035	-.139	-.118	.021	.040	-.441*	-.569**	-.314	-.523*	.554**	1.000	-.430*	.231	.344	.287	.256	.484*	.571**	.678**
		Sig. (2-tailed)	.041	.025	.873	.528	.592	.925	.856	.035	.005	.155	.013	.006	.	.046	.288	.108	.184	.238	.019	.004	.001
		N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
	FSST_Best	Correlation Coefficient	.480*	-.315	-.164	-.002	.449*	.248	.197	-.186	.516*	.379	.730**	-.634**	-.430*	1.000	-.347	-.421	-.294	-.321	-.543**	-.598**	-.710**
		Sig. (2-tailed)	.024	.154	.466	.994	.036	.266	.380	.408	.014	.082	.000	.002	.046	.	.113	.051	.184	.145	.009	.003	.000

	N	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
Best_HipFlx_Dominant_AdjWeight	Correlation Coefficient	-.037	-.144	-.538**	-.599**	-.331	-.321	-.302	-.159	-.541**	-.567**	-.484*	.225	.231	-.347	1.000	.794**	.776**	.913**	.740**	.410	.600**
	Sig. (2-tailed)	.866	.512	.008	.003	.123	.135	.161	.469	.008	.006	.022	.301	.288	.113	.	.000	.000	.000	.000	.052	.003
	N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
Best_KnExt_Dominant_AdjWeight	Correlation Coefficient	-.149	-.088	-.473*	-.512*	-.331	-.207	-.175	-.064	-.493*	-.360	-.531*	.390	.344	-.421	.794**	1.000	.826**	.941**	.655**	.546**	.615**
	Sig. (2-tailed)	.497	.691	.023	.013	.123	.342	.425	.773	.017	.099	.011	.066	.108	.051	.000	.	.000	.000	.001	.007	.002
	N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
Best_AnkDorFlx_Dominant_AdjWeight	Correlation Coefficient	.066	-.081	-.539**	-.596**	-.253	-.110	-.079	-.079	-.419*	-.277	-.440*	.216	.287	-.294	.776**	.826**	1.000	.913**	.710**	.387	.484*
	Sig. (2-tailed)	.766	.715	.008	.003	.244	.617	.719	.719	.047	.211	.041	.321	.184	.184	.000	.000	.	.000	.000	.068	.023
	N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
Composite_Strength_AdjWeight	Correlation Coefficient	-.001	-.162	-.584**	-.616**	-.292	-.203	-.175	-.079	-.482*	-.406	-.495*	.243	.256	-.321	.913**	.941**	.913**	1.000	.734**	.442*	.550**
	Sig. (2-tailed)	.996	.461	.003	.002	.176	.352	.425	.719	.020	.061	.019	.264	.238	.145	.000	.000	.000	.	.000	.035	.008
	N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
Best_Grip_Dominant_AdjWeight	Correlation Coefficient	-.312	.182	-.249	-.343	-.331	-.169	-.127	-.191	-.684**	-.644**	-.597**	.325	.484*	-.543**	.740**	.655**	.710**	.734**	1.000	.676**	.689**
	Sig. (2-tailed)	.147	.406	.253	.109	.123	.440	.563	.383	.000	.001	.003	.130	.019	.009	.000	.001	.000	.000	.	.000	.000
	N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
Best_UGS	Correlation Coefficient	-.516*	.228	-.114	-.232	-.195	-.071	-.048	-.223	-.567**	-.584**	-.692**	.446*	.571**	-.598**	.410	.546**	.387	.442*	.676**	1.000	.869**
	Sig. (2-tailed)	.012	.294	.604	.286	.373	.747	.829	.307	.005	.004	.000	.033	.004	.003	.052	.007	.068	.035	.000	.	.000
	N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
Best_FGS	Correlation Coefficient	-.483*	.364	-.133	-.373	-.376	-.249	-.205	-.242	-.697**	-.600**	-.775**	.577**	.678**	-.710**	.600**	.615**	.484*	.550**	.689**	.869**	1.000
	Sig. (2-tailed)	.023	.096	.556	.087	.085	.263	.359	.279	.000	.003	.000	.005	.001	.000	.003	.002	.023	.008	.000	.000	.
	N	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22

Table 4- I/I Genotype Group (Significant correlations are highlighted)

			Age (yrs)	Height_meter	Weight_Kg	BMI	Recurrent Faller	Number of falls past 12 months	Faller	FOF	LE_ResponseTime Best	STS_Best	RST_Best	MSL_Best_AdjHeight	SLST_Best	FSST_Best	Best_HipFlx_Dominant_AdjWeight	Best_KnExt_Dominant_AdjWeight	Best_AnkDorFlx_Dominant_AdjWeight	Composite_Strength_AdjWeight	Best_Grip_Dominant_AdjWeight	Best_UGS	Best_FGS
Spearman's rho	LE_ResponseTime Best	Correlation Coefficient	-.178	-.138	.059	.203	.094	.059	.000	.580*	1.000	.456	.547*	-.240	-.363	.409	-.574*	-.529*	-.583*	-.642**	-.525*	-.447	-.429
		Sig. (2-tailed)	.494	.598	.823	.434	.718	.821	1.000	.015	.	.066	.023	.353	.152	.103	.016	.029	.014	.005	.031	.072	.086
		N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
	STS_Best	Correlation Coefficient	-.038	.340	.262	.056	-.220	-.207	-.211	.316	.456	1.000	.355	-.451	-.447	.397	-.333	-.431	-.471	-.400	-.225	-.539*	-.424
		Sig. (2-tailed)	.885	.182	.309	.830	.395	.425	.417	.216	.066	.	.162	.069	.072	.115	.191	.084	.057	.112	.384	.026	.090
		N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
	RST_Best	Correlation Coefficient	-.192	-.236	.159	.402	.283	.369	.343	.738**	.547*	.355	1.000	-.757**	-.678**	.775**	-.657**	-.566*	-.603*	-.674**	-.512*	-.896**	-.909**
		Sig. (2-tailed)	.461	.361	.541	.110	.270	.145	.178	.001	.023	.162	.	.000	.003	.000	.004	.018	.010	.003	.036	.000	.000
		N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
	MSL_Best_AdjHeight	Correlation Coefficient	-.056	.128	-.181	-.343	-.220	-.277	-.264	-.580*	-.240	-.451	-.757**	1.000	.805**	-.846**	.618**	.498*	.485*	.569*	.510*	.667**	.779**
		Sig. (2-tailed)	.830	.624	.486	.178	.395	.281	.307	.015	.353	.069	.000	.	.000	.000	.008	.042	.048	.017	.037	.003	.000
		N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
	SLST_Best	Correlation Coefficient	-.295	.117	-.094	-.279	-.457	-.587*	-.573*	-.519*	-.363	-.447	-.678**	.805**	1.000	-.775**	.533*	.569*	.632**	.610**	.404	.587*	.617**
		Sig. (2-tailed)	.250	.654	.720	.278	.065	.013	.016	.033	.152	.072	.003	.000	.	.000	.027	.017	.006	.009	.108	.013	.008
		N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
	FSST_Best	Correlation Coefficient	.095	-.416	-.034	.316	.409	.442	.422	.659**	.409	.397	.775**	-.846**	-.775**	1.000	-.600*	-.424	-.449	-.534*	-.627**	-.645**	-.733**
		Sig. (2-tailed)	.718	.097	.896	.216	.103	.076	.092	.004	.103	.115	.000	.000	.000	.	.011	.090	.071	.027	.007	.005	.001

	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Best_HipFlx_Dominant_AdjWeight	Correlation Coefficient	.376	.084	-.471	-.667**	-.157	-.146	-.079	-.738**	-.574*	-.333	-.657**	.618**	.533*	-.600*	1.000	.843**	.809**	.941**	.630**	.396	.507*
	Sig. (2-tailed)	.137	.749	.057	.003	.546	.575	.763	.001	.016	.191	.004	.008	.027	.011	.	.000	.000	.000	.007	.115	.038
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Best_KnExt_Dominant_AdjWeight	Correlation Coefficient	.298	-.037	-.395	-.542*	-.126	-.094	-.026	-.501*	-.529*	-.431	-.566*	.498*	.569*	-.424	.843**	1.000	.875**	.941**	.605*	.351	.370
	Sig. (2-tailed)	.245	.888	.117	.025	.630	.718	.920	.041	.029	.084	.018	.042	.017	.090	.000	.	.000	.000	.010	.167	.144
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Best_AnkDorFlx_Dominant_AdjWeight	Correlation Coefficient	.320	-.071	-.566*	-.681**	-.157	-.210	-.158	-.632**	-.583*	-.471	-.603*	.485*	.632**	-.449	.809**	.875**	1.000	.936**	.525*	.406	.382
	Sig. (2-tailed)	.210	.785	.018	.003	.546	.418	.544	.006	.014	.057	.010	.048	.006	.071	.000	.000	.	.000	.031	.106	.130
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Composite_Strength_AdjWeight	Correlation Coefficient	.376	.032	-.483*	-.664**	-.189	-.177	-.105	-.685**	-.642**	-.400	-.674**	.569*	.610**	-.534*	.941**	.941**	.936**	1.000	.635**	.423	.468
	Sig. (2-tailed)	.137	.903	.050	.004	.468	.497	.687	.002	.005	.112	.003	.017	.009	.027	.000	.000	.000	.	.006	.090	.058
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Best_Grip_Dominant_AdjWeight	Correlation Coefficient	.221	.441	.012	-.392	-.063	.020	.053	-.474	-.525*	-.225	-.512*	.510*	.404	-.627**	.630**	.605*	.525*	.635**	1.000	.245	.358
	Sig. (2-tailed)	.394	.076	.963	.119	.810	.940	.841	.054	.031	.384	.036	.037	.108	.007	.007	.010	.031	.006	.	.342	.158
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Best_UGS	Correlation Coefficient	.077	.059	-.112	-.185	-.158	-.236	-.224	-.620**	-.447	-.539*	-.896**	.667**	.587*	-.645**	.396	.351	.406	.423	.245	1.000	.945**
	Sig. (2-tailed)	.768	.821	.670	.477	.546	.361	.387	.008	.072	.026	.000	.003	.013	.005	.115	.167	.106	.090	.342	.	.000
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Best_FGS	Correlation Coefficient	.052	.212	-.118	-.306	-.252	-.248	-.211	-.738**	-.429	-.424	-.909**	.779**	.617**	-.733**	.507*	.370	.382	.468	.358	.945**	1.000
	Sig. (2-tailed)	.844	.414	.653	.232	.329	.337	.417	.001	.086	.090	.000	.000	.008	.001	.038	.144	.130	.058	.158	.000	.
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17

Table 5- D Allele Group (Significant correlations are highlighted)

			Age (yrs)	Height_meter	Weight_Kg	BMI	Recurrent Faller	Number of falls past 12 months	Faller	FOF	LE_ResponseTime Best	STS_Best	RST_Best	MSL_Best_AdjHeight	SLST_Best	FSST_Best	Best_HipFlx_Dominant_AdjWeight	Best_KnExt_Dominant_AdjWeight	Best_AnkDorFlx_Dominant_AdjWeight	Composite_Strength_AdjWeight	Best_Grip_Dominant_AdjWeight	Best_UGS	Best_FGS
Spearman's rho	LE_ResponseTime Best	Correlation Coefficient	.603**	-.308**	.076	.239*	.236*	.249*	.211	.220	1.000	.507**	.725**	-.595**	-.548**	.512**	-.429**	-.401**	-.299*	-.401**	-.504**	-.551**	-.643**
		Sig. (2-tailed)	.000	.009	.526	.045	.047	.036	.077	.065	.	.000	.000	.000	.000	.000	.000	.001	.011	.001	.000	.000	.000
		N	71	71	71	71	71	71	71	71	71	69	69	71	71	70	71	71	71	71	71	71	70
	STS_Best	Correlation Coefficient	.307*	-.003	.326**	.373**	.071	.143	.145	.245*	.507**	1.000	.637**	-.522**	-.337**	.557**	-.579**	-.441**	-.395**	-.507**	-.481**	-.561**	-.549**
		Sig. (2-tailed)	.010	.980	.006	.002	.564	.240	.236	.043	.000	.	.000	.000	.005	.000	.000	.000	.001	.000	.000	.000	.000
		N	69	69	69	69	69	69	69	69	69	69	68	69	69	69	69	69	69	69	69	69	69
	RST_Best	Correlation Coefficient	.530**	-.253*	.210	.324**	.274*	.226	.172	.193	.725**	.637**	1.000	-.698**	-.539**	.723**	-.416**	-.492**	-.453**	-.492**	-.471**	-.644**	-.723**
		Sig. (2-tailed)	.000	.036	.083	.007	.023	.062	.158	.113	.000	.000	.	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
		N	69	69	69	69	69	69	69	69	69	68	69	69	69	69	69	69	69	69	69	69	69
	MSL_Best_AdjHeight	Correlation Coefficient	-.441**	.279*	-.131	-.270*	-.146	-.123	-.097	-.248*	-.595**	-.522**	-.698**	1.000	.586**	-.675**	.357**	.474**	.417**	.434**	.385**	.531**	.687**
		Sig. (2-tailed)	.000	.019	.277	.023	.224	.307	.421	.037	.000	.000	.000	.	.000	.000	.002	.000	.000	.000	.001	.000	.000
		N	71	71	71	71	71	71	71	71	71	69	69	71	71	70	71	71	71	71	71	71	70
	SLST_Best	Correlation Coefficient	-.537**	.231	-.246*	-.410**	-.304*	-.251*	-.206	-.294*	-.548**	-.337**	-.539**	.586**	1.000	-.444**	.376**	.349**	.401**	.395**	.475**	.547**	.543**
		Sig. (2-tailed)	.000	.052	.039	.000	.010	.035	.084	.013	.000	.005	.000	.000	.	.000	.001	.003	.001	.001	.000	.000	.000
		N	71	71	71	71	71	71	71	71	71	69	69	71	71	70	71	71	71	71	71	71	70
	FSST_Best	Correlation Coefficient	.464**	-.198	.143	.277*	.219	.168	.117	.141	.512**	.557**	.723**	-.675**	-.444**	1.000	-.372**	-.451**	-.400**	-.440**	-.397**	-.653**	-.778**
		Sig. (2-tailed)	.000	.100	.237	.020	.069	.166	.335	.245	.000	.000	.000	.000	.000	.	.002	.000	.001	.000	.001	.000	.000

	N	70	70	70	70	70	70	70	70	70	69	69	70	70	70	70	70	70	70	70	70	70
Best_HipFlx_Dominant_AdjWeight	Correlation Coefficient	-.148	-.010	-.561**	-.634**	-.201	-.288*	-.284*	-.310**	-.429**	-.579**	-.416**	.357**	.376**	-.372**	1.000	.677**	.633**	.845**	.656**	.484**	.503**
	Sig. (2-tailed)	.217	.935	.000	.000	.092	.015	.016	.008	.000	.000	.000	.002	.001	.002	.	.000	.000	.000	.000	.000	.000
	N	71	71	71	71	71	71	71	71	71	69	69	71	71	70	71	71	71	71	71	71	70
Best_KnExt_Dominant_AdjWeight	Correlation Coefficient	-.205	-.099	-.564**	-.547**	-.160	-.142	-.117	-.248*	-.401**	-.441**	-.492**	.474**	.349**	-.451**	.677**	1.000	.732**	.915**	.482**	.504**	.524**
	Sig. (2-tailed)	.086	.411	.000	.000	.184	.237	.332	.037	.001	.000	.000	.000	.003	.000	.000	.	.000	.000	.000	.000	.000
	N	71	71	71	71	71	71	71	71	71	69	69	71	71	70	71	71	71	71	71	71	70
Best_AnkDorFlx_Dominant_AdjWeight	Correlation Coefficient	-.145	.046	-.588**	-.640**	-.201	-.207	-.184	-.208	-.299*	-.395**	-.453**	.417**	.401**	-.400**	.633**	.732**	1.000	.876**	.607**	.500**	.570**
	Sig. (2-tailed)	.227	.701	.000	.000	.092	.084	.124	.082	.011	.001	.000	.000	.001	.001	.000	.000	.	.000	.000	.000	.000
	N	71	71	71	71	71	71	71	71	71	69	69	71	71	70	71	71	71	71	71	71	70
Composite_Strength_AdjWeight	Correlation Coefficient	-.170	-.031	-.622**	-.661**	-.184	-.213	-.195	-.281*	-.401**	-.507**	-.492**	.434**	.395**	-.440**	.845**	.915**	.876**	1.000	.626**	.544**	.578**
	Sig. (2-tailed)	.156	.799	.000	.000	.124	.074	.102	.018	.001	.000	.000	.000	.001	.000	.000	.000	.000	.	.000	.000	.000
	N	71	71	71	71	71	71	71	71	71	69	69	71	71	70	71	71	71	71	71	71	70
Best_Grip_Dominant_AdjWeight	Correlation Coefficient	-.314**	.366**	-.375**	-.608**	-.270*	-.296*	-.271*	-.329**	-.504**	-.481**	-.471**	.385**	.475**	-.397**	.656**	.482**	.607**	.626**	1.000	.603**	.523**
	Sig. (2-tailed)	.008	.002	.001	.000	.023	.012	.022	.005	.000	.000	.000	.001	.000	.001	.000	.000	.000	.000	.	.000	.000
	N	71	71	71	71	71	71	71	71	71	69	69	71	71	70	71	71	71	71	71	71	70
Best_UGS	Correlation Coefficient	-.508**	.303*	-.238*	-.408**	-.178	-.105	-.062	-.292*	-.551**	-.561**	-.644**	.531**	.547**	-.653**	.484**	.504**	.500**	.544**	.603**	1.000	.810**
	Sig. (2-tailed)	.000	.010	.045	.000	.138	.385	.608	.014	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.	.000
	N	71	71	71	71	71	71	71	71	71	69	69	71	71	70	71	71	71	71	71	71	70
Best_FGS	Correlation Coefficient	-.540**	.324**	-.261*	-.437**	-.162	-.123	-.080	-.283*	-.643**	-.549**	-.723**	.687**	.543**	-.778**	.503**	.524**	.570**	.578**	.523**	.810**	1.000
	Sig. (2-tailed)	.000	.006	.029	.000	.180	.310	.510	.018	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.
	N	70	70	70	70	70	70	70	70	70	69	69	70	70	70	70	70	70	70	70	70	70

Table 6- I Allele Group (Significant correlations are highlighted)

			Age (yrs)	Height_meter	Weight_Kg	BMI	Recurrent Faller	Number of falls past 12 months	Faller	FOF	LE_ResponseTime Best	STS_Best	RST_Best	MSL_Best_AdjHeight	SLST_Best	FSST_Best	Best_HipFlx_Dominant_AdjWeight	Best_KnExt_Dominant_AdjWeight	Best_AnkDorFlx_Dominant_AdjWeight	Composite_Strength_AdjWeight	Best_Grip_Dominant_AdjWeight	Best_UGS	Best_FGS
Spearman's rho	LE_ResponseTime Best	Correlation Coefficient	.409**	-.233	.177	.283*	.132	.190	.168	.228	1.000	.511**	.707**	-.515**	-.436**	.443**	-.439**	-.400**	-.318**	-.409**	-.445**	-.502**	-.584**
		Sig. (2-tailed)	.001	.062	.157	.022	.293	.129	.181	.068	.	.000	.000	.000	.000	.000	.000	.001	.010	.001	.000	.000	.000
		N	65	65	65	65	65	65	65	65	65	64	64	65	65	65	65	65	65	65	65	65	65
	STS_Best	Correlation Coefficient	.181	.039	.353**	.363**	.022	.060	.059	.277*	.511**	1.000	.664**	-.562**	-.367**	.566**	-.532**	-.481**	-.459**	-.543**	-.406**	-.572**	-.561**
		Sig. (2-tailed)	.152	.760	.004	.003	.860	.637	.643	.026	.000	.	.000	.000	.003	.000	.000	.000	.000	.000	.001	.000	.000
		N	64	64	64	64	64	64	64	64	64	64	63	64	64	64	64	64	64	64	64	64	64
	RST_Best	Correlation Coefficient	.411**	-.252*	.302*	.410**	.248*	.289*	.249*	.333**	.707**	.664**	1.000	-.766**	-.571**	.722**	-.455**	-.516**	-.478**	-.548**	-.475**	-.693**	-.741**
		Sig. (2-tailed)	.001	.044	.015	.001	.048	.021	.047	.007	.000	.000	.	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
		N	64	64	64	64	64	64	64	64	64	63	64	64	64	64	64	64	64	64	64	64	64
	MSL_Best_AdjHeight	Correlation Coefficient	-.324**	.203	-.311*	-.435**	-.140	-.170	-.151	-.395**	-.515**	-.562**	-.766**	1.000	.648**	-.752**	.470**	.508**	.499**	.542**	.462**	.634**	.743**
		Sig. (2-tailed)	.008	.105	.012	.000	.266	.176	.231	.001	.000	.000	.000	.	.000	.000	.000	.000	.000	.000	.000	.000	.000
		N	65	65	65	65	65	65	65	65	65	64	64	65	65	65	65	65	65	65	65	65	65
	SLST_Best	Correlation Coefficient	-.510**	.153	-.350**	-.439**	-.396**	-.438**	-.386**	-.304*	-.436**	-.367**	-.571**	.648**	1.000	-.549**	.473**	.400**	.502**	.494**	.476**	.553**	.538**
		Sig. (2-tailed)	.000	.223	.004	.000	.001	.000	.002	.014	.000	.003	.000	.000	.	.000	.000	.001	.000	.000	.000	.000	.000
		N	65	65	65	65	65	65	65	65	65	64	64	65	65	65	65	65	65	65	65	65	65
	FSST_Best	Correlation Coefficient	.347**	-.194	.241	.387**	.207	.228	.190	.383**	.443**	.566**	.722**	-.752**	-.549**	1.000	-.457**	-.464**	-.442**	-.513**	-.457**	-.650**	-.763**
		Sig. (2-tailed)	.005	.121	.053	.001	.099	.068	.129	.002	.000	.000	.000	.000	.000	.	.000	.000	.000	.000	.000	.000	.000

	N	65	65	65	65	65	65	65	65	65	64	64	65	65	65	65	65	65	65	65	65	65
Best_HipFlx_Dominant_AdjWeight	Correlation Coefficient	-.059	.023	-.578**	-.655**	-.162	-.238	-.224	-.462**	-.439**	-.532**	-.455**	.470**	.473**	-.457**	1.000	.702**	.666**	.850**	.611**	.486**	.514**
	Sig. (2-tailed)	.641	.854	.000	.000	.198	.056	.073	.000	.000	.000	.000	.000	.000	.000	.	.000	.000	.000	.000	.000	.000
	N	65	65	65	65	65	65	65	65	65	64	64	65	65	65	65	65	65	65	65	65	65
Best_KnExt_Dominant_AdjWeight	Correlation Coefficient	-.051	-.089	-.572**	-.573**	-.103	-.106	-.076	-.402**	-.400**	-.481**	-.516**	.508**	.400**	-.464**	.702**	1.000	.753**	.931**	.505**	.447**	.484**
	Sig. (2-tailed)	.688	.481	.000	.000	.415	.402	.546	.001	.001	.000	.000	.000	.001	.000	.000	.	.000	.000	.000	.000	.000
	N	65	65	65	65	65	65	65	65	65	64	64	65	65	65	65	65	65	65	65	65	65
Best_AnkDorFlx_Dominant_AdjWeight	Correlation Coefficient	-.140	.034	-.651**	-.688**	-.182	-.269*	-.248*	-.371**	-.318**	-.459**	-.478**	.499**	.502**	-.442**	.666**	.753**	1.000	.880**	.581**	.510**	.569**
	Sig. (2-tailed)	.267	.790	.000	.000	.148	.030	.046	.002	.010	.000	.000	.000	.000	.000	.000	.000	.	.000	.000	.000	.000
	N	65	65	65	65	65	65	65	65	65	64	64	65	65	65	65	65	65	65	65	65	65
Composite_Strength_AdjWeight	Correlation Coefficient	-.090	-.006	-.634**	-.683**	-.144	-.199	-.175	-.454**	-.409**	-.543**	-.548**	.542**	.494**	-.513**	.850**	.931**	.880**	1.000	.613**	.543**	.588**
	Sig. (2-tailed)	.473	.960	.000	.000	.251	.113	.164	.000	.001	.000	.000	.000	.000	.000	.000	.000	.000	.	.000	.000	.000
	N	65	65	65	65	65	65	65	65	65	64	64	65	65	65	65	65	65	65	65	65	65
Best_Grip_Dominant_AdjWeight	Correlation Coefficient	-.223	.445**	-.344**	-.614**	-.221	-.251*	-.229	-.382**	-.445**	-.406**	-.475**	.462**	.476**	-.457**	.611**	.505**	.581**	.613**	1.000	.514**	.489**
	Sig. (2-tailed)	.075	.000	.005	.000	.077	.044	.067	.002	.000	.001	.000	.000	.000	.000	.000	.000	.000	.000	.	.000	.000
	N	65	65	65	65	65	65	65	65	65	64	64	65	65	65	65	65	65	65	65	65	65
Best_UGS	Correlation Coefficient	-.360**	.288*	-.286*	-.447**	-.155	-.139	-.099	-.431**	-.502**	-.572**	-.693**	.634**	.553**	-.650**	.486**	.447**	.510**	.543**	.514**	1.000	.846**
	Sig. (2-tailed)	.003	.020	.021	.000	.217	.270	.431	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.	.000
	N	65	65	65	65	65	65	65	65	65	64	64	65	65	65	65	65	65	65	65	65	65
Best_FGS	Correlation Coefficient	-.424**	.251*	-.354**	-.499**	-.124	-.147	-.118	-.422**	-.584**	-.561**	-.741**	.743**	.538**	-.763**	.514**	.484**	.569**	.588**	.489**	.846**	1.000
	Sig. (2-tailed)	.000	.043	.004	.000	.327	.243	.351	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.
	N	65	65	65	65	65	65	65	65	65	64	64	65	65	65	65	65	65	65	65	65	65

Appendix 1

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Gender	88	.00	1.00	.7841	.41381
Age (yrs)	88	61.00	100.00	71.9091	7.97934
BMI	88	16.59	42.95	28.3559	5.55076
Valid N (listwise)	88				

I/D

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Gender	48	.00	1.00	.7917	.41041
Age (yrs)	48	63.00	89.00	71.1458	6.75715
BMI	48	18.93	41.89	29.0307	5.76301
Valid N (listwise)	48				

D/D

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Gender	23	.00	1.00	.7826	.42174
Age (yrs)	23	61.00	100.00	72.9130	10.48338
BMI	23	16.59	42.95	27.0684	6.18400
Valid N (listwise)	23				

I/I

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Gender	17	.00	1.00	.7647	.43724
Age (yrs)	17	62.00	84.00	72.7059	7.55616
BMI	17	20.82	33.55	28.1924	3.68972
Valid N (listwise)	17				

Appendix 2

Nonparametric Tests

Syntax		NPTESTS /INDEPENDENT TEST (Age Weight_Kg BMI NumberFalls LE_ResponseTimeBest STS_Best RST_Best MSL_Best_AdjHeight SLST_Best FSST_Best Best_HipFlx_Dominant_AdjWeight Best_KnExt_Dominant_AdjWeight Best_AnkDorFlx_Dominant_AdjWeight Composite_Strength_AdjWeight Best_Grip_Dominant_AdjWeight Best_UGS Best_FGS) GROUP (Genotype) KRUSKAL_WALLIS(COMPARE=PAIRWISE) /MISSING SCOPE=ANALYSIS USERMISSING=EXCLUDE /CRITERIA ALPHA=0.05 CILEVEL=95.
Resources	Processor Time	00:00:00.53
	Elapsed Time	00:00:00.51

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Age (yrs) is the same across categories of Genotype.	Independent-Samples Kruskal-Wallis Test	.796	Retain the null hypothesis.
2	The distribution of Weight_Kg is the same across categories of Genotype.	Independent-Samples Kruskal-Wallis Test	.504	Retain the null hypothesis.
3	The distribution of BMI is the same across categories of Genotype.	Independent-Samples Kruskal-Wallis Test	.302	Retain the null hypothesis.
4	The distribution of Number of falls past 12 months is the same across categories of Genotype.	Independent-Samples Kruskal-Wallis Test	.201	Retain the null hypothesis.
5	The distribution of LE_ResponseTimeBest is the same across categories of Genotype.	Independent-Samples Kruskal-Wallis Test	.748	Retain the null hypothesis.
6	The distribution of STS_Best is the same across categories of Genotype.	Independent-Samples Kruskal-Wallis Test	.837	Retain the null hypothesis.
7	The distribution of RST_Best is the same across categories of Genotype.	Independent-Samples Kruskal-Wallis Test	.490	Retain the null hypothesis.
8	The distribution of MSL_Best_AdjHeight is the same across categories of Genotype.	Independent-Samples Kruskal-Wallis Test	.623	Retain the null hypothesis.
9	The distribution of SLST_Best is the same across categories of Genotype.	Independent-Samples Kruskal-Wallis Test	.755	Retain the null hypothesis.
10	The distribution of FSST_Best is the same across categories of Genotype.	Independent-Samples Kruskal-Wallis Test	.650	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
11	The distribution of Best_HipFlx_Dominant_AdjWeight is the same across categories of Genotype.	Independent-Samples Kruskal-Wallis Test	.923	Retain the null hypothesis.
12	The distribution of Best_KnExt_Dominant_AdjWeight is the same across categories of Genotype.	Independent-Samples Kruskal-Wallis Test	.588	Retain the null hypothesis.
13	The distribution of Best_AnkDorFlx_Dominant_Adj Weight is the same across categories of Genotype.	Independent-Samples Kruskal-Wallis Test	.505	Retain the null hypothesis.
14	The distribution of Composite_Strength_AdjWeight is the same across categories of Genotype.	Independent-Samples Kruskal-Wallis Test	.699	Retain the null hypothesis.
15	The distribution of Best_Grip_Dominant_AdjWeight is the same across categories of Genotype.	Independent-Samples Kruskal-Wallis Test	.395	Retain the null hypothesis.
16	The distribution of Best_UGS is the same across categories of Genotype.	Independent-Samples Kruskal-Wallis Test	.738	Retain the null hypothesis.
17	The distribution of Best_FGS is the same across categories of Genotype.	Independent-Samples Kruskal-Wallis Test	.420	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Appendix 3

Nonparametric Correlations

Whole sample

Correlations

			Age (yrs)	Height_meter	Weight_Kg	BMI	Recurrent Faller	Number of falls past 12 months	Faller	FOF	LE_ResponseTime Best	STS_Best	RST_Best	MSL_Best_AdjHeight	SLST_Best	FSST_Best	Best_HipFlx_Dominant_AdjWeight	Best_KnExt_Dominant_AdjWeight	Best_AnkDorFlx_Dominant_AdjWeight	Composite_Strength_AdjWeight	Best_Grip_Dominant_AdjWeight	Best_UGS	Best_FGS
Spearman's rho	Age (yrs)	Correlation Coefficient	1.000	-.308**	-.227*	-.102	.240*	.263*	.234*	-.014	.455**	.240*	.402**	-.362**	-.477**	.377**	-.057	-.084	-.078	-.064	-.231*	-.403**	-.425**
		Sig. (2-tailed)	.	.004	.033	.344	.024	.013	.028	.896	.000	.026	.000	.001	.000	.000	.597	.439	.468	.554	.031	.000	.000
		N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
	Height_meter	Correlation Coefficient	-.308**	1.000	.354**	-.078	-.204	-.155	-.121	-.123	-.255*	.028	-.242*	.254*	.211*	-.221*	-.014	-.091	-.005	-.043	.384**	.253*	.288**
		Sig. (2-tailed)	.004	.	.001	.471	.057	.150	.263	.255	.017	.799	.025	.017	.048	.040	.898	.397	.964	.691	.000	.018	.007
		N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
	Weight_Kg	Correlation Coefficient	-.227*	.354**	1.000	.874**	.141	.104	.092	.265*	.079	.314**	.203	-.136	-.230*	.130	-.564**	-.530**	-.589**	-.601**	-.317**	-.226*	-.260*
		Sig. (2-tailed)	.033	.001	.	.000	.191	.334	.394	.013	.462	.003	.060	.205	.031	.229	.000	.000	.000	.000	.003	.034	.015
		N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
	BMI	Correlation Coefficient	-.102	-.078	.874**	1.000	.269*	.205	.172	.342**	.220*	.341**	.323**	-.276**	-.376**	.279**	-.631**	-.527**	-.622**	-.638**	-.563**	-.370**	-.423**
		Sig. (2-tailed)	.344	.471	.000	.	.011	.055	.108	.001	.039	.001	.002	.009	.000	.009	.000	.000	.000	.000	.000	.000	.000
		N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
	RecurrentFaller	Correlation Coefficient	.240*	-.204	.141	.269*	1.000	.734**	.562**	-.057	.214*	.035	.280**	-.165	-.330**	.249*	-.203	-.148	-.188	-.175	-.241*	-.172	-.169
		Sig. (2-tailed)	.024	.057	.191	.011	.	.000	.000	.597	.045	.750	.009	.124	.002	.020	.058	.169	.079	.103	.024	.109	.117
		N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87

Number of falls past 12 months	Correlation Coefficient	.263*	-.155	.104	.205	.734**	1.000	.971**	-.009	.214*	.078	.244*	-.152	-.318**	.220*	-.269*	-.115	-.204	-.188	-.246*	-.124	-.131
	Sig. (2-tailed)	.013	.150	.334	.055	.000	.	.000	.936	.046	.478	.024	.158	.003	.041	.011	.284	.057	.079	.021	.249	.227
	N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
Faller	Correlation Coefficient	.234*	-.121	.092	.172	.562**	.971**	1.000	.000	.172	.076	.191	-.123	-.279**	.173	-.253*	-.080	-.178	-.160	-.222*	-.087	-.087
	Sig. (2-tailed)	.028	.263	.394	.108	.000	.000	.	1.000	.109	.489	.078	.252	.008	.109	.018	.459	.097	.137	.037	.421	.424
	N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
FOF	Correlation Coefficient	-.014	-.123	.265*	.342**	-.057	-.009	.000	1.000	.291**	.276*	.293**	-.324**	-.337**	.258*	-.383**	-.315**	-.278**	-.359**	-.353**	-.357**	-.370**
	Sig. (2-tailed)	.896	.255	.013	.001	.597	.936	1.000	.	.006	.010	.006	.002	.001	.016	.000	.003	.009	.001	.001	.001	.000
	N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
LE_ResponseTime Best	Correlation Coefficient	.455**	-.255*	.079	.220*	.214*	.214*	.172	.291**	1.000	.524**	.699**	-.533**	-.500**	.481**	-.462**	-.432**	-.336**	-.439**	-.493**	-.539**	-.619**
	Sig. (2-tailed)	.000	.017	.462	.039	.045	.046	.109	.006	.	.000	.000	.000	.000	.000	.000	.000	.001	.000	.000	.000	.000
	N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
STS_Best	Correlation Coefficient	.240*	.028	.314**	.341**	.035	.078	.076	.276*	.524**	1.000	.612**	-.513**	-.376**	.534**	-.537**	-.459**	-.427**	-.507**	-.456**	-.574**	-.557**
	Sig. (2-tailed)	.026	.799	.003	.001	.750	.478	.489	.010	.000	.	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	86	86	86	86	86	86	86	86	86	86	85	86	86	86	86	86	86	86	86	86	86
RST_Best	Correlation Coefficient	.402**	-.242*	.203	.323**	.280**	.244*	.191	.293**	.699**	.612**	1.000	-.709**	-.560**	.728**	-.455**	-.524**	-.480**	-.535**	-.481**	-.684**	-.743**
	Sig. (2-tailed)	.000	.025	.060	.002	.009	.024	.078	.006	.000	.000	.	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	86	86	86	86	86	86	86	86	86	85	86	86	86	86	86	86	86	86	86	86	86
MSL_Best_AdjHeight	Correlation Coefficient	-.362**	.254*	-.136	-.276**	-.165	-.152	-.123	-.324**	-.533**	-.513**	-.709**	1.000	.626**	-.720**	.394**	.481**	.438**	.468**	.405**	.572**	.711**
	Sig. (2-tailed)	.001	.017	.205	.009	.124	.158	.252	.002	.000	.000	.000	.	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87

SLST_Best	Correlation Coefficient	-.477**	.211*	-.230*	-.376**	-.330**	-.318**	-.279**	-.337**	-.500**	-.376**	-.560**	.626**	1.000	-.524**	.405**	.387**	.453**	.437**	.475**	.552**	.549**
	Sig. (2-tailed)	.000	.048	.031	.000	.002	.003	.008	.001	.000	.000	.000	.000	.	.000	.000	.000	.000	.000	.000	.000	.000
	N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
FSST_Best	Correlation Coefficient	.377**	-.221*	.130	.279**	.249*	.220*	.173	.258*	.481**	.534**	.728**	-.720**	-.524**	1.000	-.415**	-.459**	-.431**	-.470**	-.446**	-.653**	-.768**
	Sig. (2-tailed)	.000	.040	.229	.009	.020	.041	.109	.016	.000	.000	.000	.000	.000	.	.000	.000	.000	.000	.000	.000	.000
	N	87	87	87	87	87	87	87	87	87	86	86	87	87	87	87	87	87	87	87	87	87
Best_HipFlx_Dominant_AdjWeight	Correlation Coefficient	-.057	-.014	-.564**	-.631**	-.203	-.269*	-.253*	-.383**	-.462**	-.537**	-.455**	.394**	.405**	-.415**	1.000	.712**	.666**	.857**	.639**	.472**	.500**
	Sig. (2-tailed)	.597	.898	.000	.000	.058	.011	.018	.000	.000	.000	.000	.000	.000	.000	.	.000	.000	.000	.000	.000	.000
	N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
Best_KnExt_Dominant_AdjWeight	Correlation Coefficient	-.084	-.091	-.530**	-.527**	-.148	-.115	-.080	-.315**	-.432**	-.459**	-.524**	.481**	.387**	-.459**	.712**	1.000	.766**	.933**	.521**	.483**	.504**
	Sig. (2-tailed)	.439	.397	.000	.000	.169	.284	.459	.003	.000	.000	.000	.000	.000	.000	.000	.	.000	.000	.000	.000	.000
	N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
Best_AnkDorFlx_Dominant_AdjWeight	Correlation Coefficient	-.078	-.005	-.589**	-.622**	-.188	-.204	-.178	-.278**	-.336**	-.427**	-.480**	.438**	.453**	-.431**	.666**	.766**	1.000	.883**	.592**	.475**	.537**
	Sig. (2-tailed)	.468	.964	.000	.000	.079	.057	.097	.009	.001	.000	.000	.000	.000	.000	.000	.000	.	.000	.000	.000	.000
	N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
Composite_Strength_AdjWeight	Correlation Coefficient	-.064	-.043	-.601**	-.638**	-.175	-.188	-.160	-.359**	-.439**	-.507**	-.535**	.468**	.437**	-.470**	.857**	.933**	.883**	1.000	.625**	.525**	.565**
	Sig. (2-tailed)	.554	.691	.000	.000	.103	.079	.137	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.	.000	.000	.000
	N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
Best_Grip_Dominant_AdjWeight	Correlation Coefficient	-.231*	.384**	-.317**	-.563**	-.241*	-.246*	-.222*	-.353**	-.493**	-.456**	-.481**	.405**	.475**	-.446**	.639**	.521**	.592**	.625**	1.000	.543**	.491**
	Sig. (2-tailed)	.031	.000	.003	.000	.024	.021	.037	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.	.000	.000
	N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87

	Best_UGS	Correlation Coefficient	-.403**	.253*	-.226*	-.370**	-.172	-.124	-.087	-.357**	-.539**	-.574**	-.684**	.572**	.552**	-.653**	.472**	.483**	.475**	.525**	.543**	1.000	.837**
		Sig. (2-tailed)	.000	.018	.034	.000	.109	.249	.421	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.	.000
		N	88	88	88	88	88	88	88	88	88	86	86	88	88	87	88	88	88	88	88	88	87
	Best_FGS	Correlation Coefficient	-.425**	.288**	-.260*	-.423**	-.169	-.131	-.087	-.370**	-.619**	-.557**	-.743**	.711**	.549**	-.768**	.500**	.504**	.537**	.565**	.491**	.837**	1.000
		Sig. (2-tailed)	.000	.007	.015	.000	.117	.227	.424	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.
		N	87	87	87	87	87	87	87	87	87	86	86	87	87	87	87	87	87	87	87	87	87

Nonparametric Correlations

I/D genotype

Correlations

			Age (yrs)	Height_meter	Weight_Kg	BMI	Recurrent Faller	Number of falls past 12 months	Faller	FOF	LE_ResponseTime Best	STS_Best	RST_Best	MSL_Best_AdjHeight	SLST_Best	FSST_Best	Best_HipFlx_Dominant_AdjWeight	Best_KnExt_Dominant_AdjWeight	Best_AnkDorFlx_Dominant_AdjWeight	Composite_Strength_AdjWeight	Best_Grip_Dominant_AdjWeight	Best_UGS	Best_FGS
Spearman's rho	Age (yrs)	Correlation Coefficient	1.000	-.365*	.009	.139	.206	.268	.234	-.003	.640**	.264	.616**	-.434**	-.619**	.460**	-.192	-.244	-.284	-.276	-.364*	-.526**	-.584**
		Sig. (2-tailed)	.	.011	.953	.346	.159	.066	.109	.982	.000	.073	.000	.002	.000	.001	.190	.095	.051	.057	.011	.000	.000
		N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
	Height_meter	Correlation Coefficient	-.365*	1.000	.216	-.197	-.148	-.185	-.151	-.045	-.323*	-.012	-.282	.241	.173	-.160	.036	-.087	.140	.043	.437**	.385**	.304*
		Sig. (2-tailed)	.011	.	.140	.180	.317	.208	.306	.763	.025	.938	.055	.099	.240	.277	.806	.555	.342	.774	.002	.007	.036
		N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
	Weight_Kg	Correlation Coefficient	.009	.216	1.000	.875**	.357*	.304*	.241	.309*	.228	.388**	.356*	-.368*	-.411**	.320*	-.578**	-.643**	-.663**	-.675**	-.440**	-.331*	-.396**
		Sig. (2-tailed)	.953	.140	.	.000	.013	.036	.099	.032	.120	.007	.014	.010	.004	.027	.000	.000	.000	.000	.002	.021	.005

	N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
BMI	Correlation Coefficient	.139	-.197	.875**	1.000	.444**	.370**	.278	.324*	.317*	.413**	.432**	-.472**	-.488**	.419**	-.654**	-.623**	-.735**	-.734**	-.677**	-.523**	-.531**
	Sig. (2-tailed)	.346	.180	.000	.	.002	.010	.055	.025	.028	.004	.002	.001	.000	.003	.000	.000	.000	.000	.000	.000	.000
	N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
RecurrentFaller	Correlation Coefficient	.206	-.148	.357*	.444**	1.000	.710**	.466**	-.164	.137	.065	.230	-.109	-.376**	.137	-.129	-.101	-.202	-.149	-.258	-.165	-.095
	Sig. (2-tailed)	.159	.317	.013	.002	.	.000	.001	.265	.352	.666	.121	.461	.008	.352	.382	.495	.169	.311	.076	.261	.521
	N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
Number of falls past 12 months	Correlation Coefficient	.268	-.185	.304*	.370**	.710**	1.000	.952**	-.038	.245	.147	.294*	-.142	-.380**	.152	-.227	-.149	-.317*	-.253	-.319*	-.131	-.144
	Sig. (2-tailed)	.066	.208	.036	.010	.000	.	.000	.797	.093	.324	.045	.337	.008	.302	.121	.312	.028	.083	.027	.375	.330
	N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
Faller	Correlation Coefficient	.234	-.151	.241	.278	.466**	.952**	1.000	.027	.242	.152	.264	-.134	-.314*	.120	-.239	-.146	-.312*	-.254	-.291*	-.081	-.126
	Sig. (2-tailed)	.109	.306	.099	.055	.001	.000	.	.857	.097	.306	.073	.364	.030	.415	.101	.322	.031	.081	.045	.583	.392
	N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
FOF	Correlation Coefficient	-.003	-.045	.309*	.324*	-.164	-.038	.027	1.000	.109	.240	.214	-.311*	-.226	.278	-.397**	-.351*	-.301*	-.390**	-.361*	-.362*	-.324*
	Sig. (2-tailed)	.982	.763	.032	.025	.265	.797	.857	.	.460	.104	.149	.031	.122	.056	.005	.015	.038	.006	.012	.011	.025
	N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
LE_ResponseTime Best	Correlation Coefficient	.640**	-.323*	.228	.317*	.137	.245	.242	.109	1.000	.500**	.752**	-.622**	-.494**	.479**	-.384**	-.344*	-.244	-.334*	-.457**	-.525**	-.615**
	Sig. (2-tailed)	.000	.025	.120	.028	.352	.093	.097	.460	.	.000	.000	.000	.000	.001	.007	.017	.094	.020	.001	.000	.000
	N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
STS_Best	Correlation Coefficient	.264	-.012	.388**	.413**	.065	.147	.152	.240	.500**	1.000	.718**	-.599**	-.330*	.623**	-.592**	-.472**	-.431**	-.560**	-.443**	-.557**	-.560**
	Sig. (2-tailed)	.073	.938	.007	.004	.666	.324	.306	.104	.000	.	.000	.000	.023	.000	.000	.001	.002	.000	.002	.000	.000
	N	47	47	47	47	47	47	47	47	47	47	46	47	47	47	47	47	47	47	47	47	47

RST_Best	Correlation Coefficient	.616**	-.282	.356*	.432**	.230	.294*	.264	.214	.752**	.718**	1.000	-.759**	-.552**	.704**	-.409**	-.468**	-.438**	-.492**	-.472**	-.640**	-.703**
	Sig. (2-tailed)	.000	.055	.014	.002	.121	.045	.073	.149	.000	.000	.	.000	.000	.000	.004	.001	.002	.000	.001	.000	.000
	N	47	47	47	47	47	47	47	47	47	46	47	47	47	47	47	47	47	47	47	47	47
MSL_Best_AdjHeight	Correlation Coefficient	-.434**	.241	-.368*	-.472**	-.109	-.142	-.134	-.311*	-.622**	-.599**	-.759**	1.000	.609**	-.706**	.455**	.503**	.499**	.521**	.463**	.601**	.732**
	Sig. (2-tailed)	.002	.099	.010	.001	.461	.337	.364	.031	.000	.000	.000	.	.000	.000	.001	.000	.000	.000	.001	.000	.000
	N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
SLST_Best	Correlation Coefficient	-.619**	.173	-.411**	-.488**	-.376**	-.380**	-.314*	-.226	-.494**	-.330*	-.552**	.609**	1.000	-.458**	.452**	.360*	.452**	.458**	.478**	.553**	.533**
	Sig. (2-tailed)	.000	.240	.004	.000	.008	.008	.030	.122	.000	.023	.000	.000	.	.001	.001	.012	.001	.001	.001	.000	.000
	N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
FSST_Best	Correlation Coefficient	.460**	-.160	.320*	.419**	.137	.152	.120	.278	.479**	.623**	.704**	-.706**	-.458**	1.000	-.425**	-.450**	-.417**	-.497**	-.394**	-.663**	-.786**
	Sig. (2-tailed)	.001	.277	.027	.003	.352	.302	.415	.056	.001	.000	.000	.000	.001	.	.003	.001	.003	.000	.006	.000	.000
	N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
Best_HipFlx_Dominant_AdjWeight	Correlation Coefficient	-.192	.036	-.578**	-.654**	-.129	-.227	-.239	-.397**	-.384**	-.592**	-.409**	.455**	.452**	-.425**	1.000	.660**	.620**	.841**	.625**	.515**	.534**
	Sig. (2-tailed)	.190	.806	.000	.000	.382	.121	.101	.005	.007	.000	.004	.001	.001	.003	.	.000	.000	.000	.000	.000	.000
	N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
Best_KnExt_Dominant_AdjWeight	Correlation Coefficient	-.244	-.087	-.643**	-.623**	-.101	-.149	-.146	-.351*	-.344*	-.472**	-.468**	.503**	.360*	-.450**	.660**	1.000	.693**	.901**	.457**	.464**	.507**
	Sig. (2-tailed)	.095	.555	.000	.000	.495	.312	.322	.015	.017	.001	.001	.000	.012	.001	.000	.	.000	.000	.001	.001	.000
	N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
Best_AnkDorFlx_Dominant_AdjWeight	Correlation Coefficient	-.284	.140	-.663**	-.735**	-.202	-.317*	-.312*	-.301*	-.244	-.431**	-.438**	.499**	.452**	-.417**	.620**	.693**	1.000	.861**	.611**	.565**	.636**
	Sig. (2-tailed)	.051	.342	.000	.000	.169	.028	.031	.038	.094	.002	.002	.000	.001	.003	.000	.000	.	.000	.000	.000	.000
	N	48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48

Composite_Strength_AdjWeight	Correlation Coefficient		-.276	.043	-.675**	-.734**	-.149	-.253	-.254	-.390**	-.334*	-.560**	-.492**	.521**	.458**	-.497**	.841**	.901**	.861**	1.000	.618**	.583**	.624**
	Sig. (2-tailed)		.057	.774	.000	.000	.311	.083	.081	.006	.020	.000	.000	.000	.001	.000	.000	.000	.000	.	.000	.000	.000
	N		48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
Best_Grip_Dominant_AdjWeight	Correlation Coefficient		-.364*	.437**	-.440**	-.677**	-.258	-.319*	-.291*	-.361*	-.457**	-.443**	-.472**	.463**	.478**	-.394**	.625**	.457**	.611**	.618**	1.000	.604**	.539**
	Sig. (2-tailed)		.011	.002	.002	.000	.076	.027	.045	.012	.001	.002	.001	.001	.001	.006	.000	.001	.000	.000	.	.000	.000
	N		48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
Best_UGS	Correlation Coefficient		-.526**	.385**	-.331*	-.523**	-.165	-.131	-.081	-.362*	-.525**	-.557**	-.640**	.601**	.553**	-.663**	.515**	.464**	.565**	.583**	.604**	1.000	.811**
	Sig. (2-tailed)		.000	.007	.021	.000	.261	.375	.583	.011	.000	.000	.000	.000	.000	.000	.000	.001	.000	.000	.000	.	.000
	N		48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48
Best_FGS	Correlation Coefficient		-.584**	.304*	-.396**	-.531**	-.095	-.144	-.126	-.324*	-.615**	-.560**	-.703**	.732**	.533**	-.786**	.534**	.507**	.636**	.624**	.539**	.811**	1.000
	Sig. (2-tailed)		.000	.036	.005	.000	.521	.330	.392	.025	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.
	N		48	48	48	48	48	48	48	48	48	47	47	48	48	48	48	48	48	48	48	48	48

Nonparametric Correlations

D/D genotype

Correlations

		Age (yrs)	Height_meter	Weight_Kg	BMI	Recurrent Faller	Number of falls past 12 months	Faller	FOF	LE_ResponseTime Best	STS_Best	RST_Best	MSL_Best_AdjHeight	SLST_Best	FSST_Best	Best_HipFlx_Dominant_AdjWeight	Best_KnExt_Dominant_AdjWeight	Best_AnkDorFlx_Dominant_AdjWeight	Composite_Strength_AdjWeight	Best_Grip_Dominant_AdjWeight	Best_UGS	Best_FGS

Spearman's rho	Age (yrs)	Correlation Coefficient	1.000	-.443*	-.413	-.302	.362	.280	.248	.160	.528**	.420	.376	-.484*	-.430*	.480*	-.037	-.149	.066	-.001	-.312	-.516*	-.483*
		Sig. (2-tailed)	.	.034	.050	.161	.089	.195	.254	.466	.010	.052	.084	.019	.041	.024	.866	.497	.766	.996	.147	.012	.023
		N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
	Height_meter	Correlation Coefficient	-.443*	1.000	.569**	.282	-.127	.059	.080	-.231	-.351	.049	-.237	.408	.465*	-.315	-.144	-.088	-.081	-.162	.182	.228	.364
		Sig. (2-tailed)	.034	.	.005	.193	.565	.788	.718	.290	.101	.828	.288	.053	.025	.154	.512	.691	.715	.461	.406	.294	.096
		N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
	Weight_Kg	Correlation Coefficient	-.413	.569**	1.000	.930**	-.234	-.210	-.191	.064	-.133	.241	-.009	.241	.035	-.164	-.538**	-.473*	-.539**	-.584**	-.249	-.114	-.133
		Sig. (2-tailed)	.050	.005	.	.000	.283	.337	.383	.773	.545	.279	.968	.267	.873	.466	.008	.023	.008	.003	.253	.604	.556
		N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
	BMI	Correlation Coefficient	-.302	.282	.930**	1.000	-.136	-.172	-.159	.159	.043	.286	.147	.147	-.139	-.002	-.599**	-.512*	-.596**	-.616**	-.343	-.232	-.373
		Sig. (2-tailed)	.161	.193	.000	.	.535	.433	.469	.469	.844	.197	.513	.503	.528	.994	.003	.013	.003	.002	.109	.286	.087
		N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
	RecurrentFaller	Correlation Coefficient	.362	-.127	-.234	-.136	1.000	.809**	.735**	-.204	.467*	.073	.407	-.272	-.118	.449*	-.331	-.331	-.253	-.292	-.331	-.195	-.376
		Sig. (2-tailed)	.089	.565	.283	.535	.	.000	.000	.350	.025	.747	.060	.208	.592	.036	.123	.123	.244	.176	.123	.373	.085
		N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
	Number of falls past 12 months	Correlation Coefficient	.280	.059	-.210	-.172	.809**	1.000	.991**	-.275	.252	.162	.128	-.140	.021	.248	-.321	-.207	-.110	-.203	-.169	-.071	-.249
		Sig. (2-tailed)	.195	.788	.337	.433	.000	.	.000	.204	.246	.471	.571	.525	.925	.266	.135	.342	.617	.352	.440	.747	.263
		N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
	Faller	Correlation Coefficient	.248	.080	-.191	-.159	.735**	.991**	1.000	-.278	.191	.154	.060	-.111	.040	.197	-.302	-.175	-.079	-.175	-.127	-.048	-.205
		Sig. (2-tailed)	.254	.718	.383	.469	.000	.000	.	.199	.383	.494	.791	.613	.856	.380	.161	.425	.719	.425	.563	.829	.359
		N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22

FOF	Correlation Coefficient	.160	-.231	.064	.159	-.204	-.275	-.278	1.000	.509*	.260	.223	-.079	-.441*	-.186	-.159	-.064	-.079	-.079	-.191	-.223	-.242
	Sig. (2-tailed)	.466	.290	.773	.469	.350	.204	.199	.	.013	.242	.319	.719	.035	.408	.469	.773	.719	.719	.383	.307	.279
	N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
LE_ResponseTime Best	Correlation Coefficient	.528**	-.351	-.133	.043	.467*	.252	.191	.509*	1.000	.516*	.645**	-.435*	-.569**	.516*	-.541**	-.493*	-.419*	-.482*	-.684**	-.567**	-.697**
	Sig. (2-tailed)	.010	.101	.545	.844	.025	.246	.383	.013	.	.014	.001	.038	.005	.014	.008	.017	.047	.020	.000	.005	.000
	N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
STS_Best	Correlation Coefficient	.420	.049	.241	.286	.073	.162	.154	.260	.516*	1.000	.430*	-.297	-.314	.379	-.567**	-.360	-.277	-.406	-.644**	-.584**	-.600**
	Sig. (2-tailed)	.052	.828	.279	.197	.747	.471	.494	.242	.014	.	.046	.180	.155	.082	.006	.099	.211	.061	.001	.004	.003
	N	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
RST_Best	Correlation Coefficient	.376	-.237	-.009	.147	.407	.128	.060	.223	.645**	.430*	1.000	-.508*	-.523*	.730**	-.484*	-.531*	-.440*	-.495*	-.597**	-.692**	-.775**
	Sig. (2-tailed)	.084	.288	.968	.513	.060	.571	.791	.319	.001	.046	.	.016	.013	.000	.022	.011	.041	.019	.003	.000	.000
	N	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
MSL_Best_AdjHeight	Correlation Coefficient	-.484*	.408	.241	.147	-.272	-.140	-.111	-.079	-.435*	-.297	-.508*	1.000	.554**	-.634**	.225	.390	.216	.243	.325	.446*	.577**
	Sig. (2-tailed)	.019	.053	.267	.503	.208	.525	.613	.719	.038	.180	.016	.	.006	.002	.301	.066	.321	.264	.130	.033	.005
	N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
SLST_Best	Correlation Coefficient	-.430*	.465*	.035	-.139	-.118	.021	.040	-.441*	-.569**	-.314	-.523*	.554**	1.000	-.430*	.231	.344	.287	.256	.484*	.571**	.678**
	Sig. (2-tailed)	.041	.025	.873	.528	.592	.925	.856	.035	.005	.155	.013	.006	.	.046	.288	.108	.184	.238	.019	.004	.001
	N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
FSST_Best	Correlation Coefficient	.480*	-.315	-.164	-.002	.449*	.248	.197	-.186	.516*	.379	.730**	-.634**	-.430*	1.000	-.347	-.421	-.294	-.321	-.543**	-.598**	-.710**
	Sig. (2-tailed)	.024	.154	.466	.994	.036	.266	.380	.408	.014	.082	.000	.002	.046	.	.113	.051	.184	.145	.009	.003	.000
	N	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22

	Best_HipFlx_Dominant_AdjWeight	Correlation Coefficient	-.037	-.144	-.538**	-.599**	-.331	-.321	-.302	-.159	-.541**	-.567**	-.484*	.225	.231	-.347	1.000	.794**	.776**	.913**	.740**	.410	.600**
		Sig. (2-tailed)	.866	.512	.008	.003	.123	.135	.161	.469	.008	.006	.022	.301	.288	.113	.	.000	.000	.000	.000	.052	.003
		N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
	Best_KnExt_Dominant_AdjWeight	Correlation Coefficient	-.149	-.088	-.473*	-.512*	-.331	-.207	-.175	-.064	-.493*	-.360	-.531*	.390	.344	-.421	.794**	1.000	.826**	.941**	.655**	.546**	.615**
		Sig. (2-tailed)	.497	.691	.023	.013	.123	.342	.425	.773	.017	.099	.011	.066	.108	.051	.000	.	.000	.000	.001	.007	.002
		N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
	Best_AnkDorFlx_Dominant_AdjWeight	Correlation Coefficient	.066	-.081	-.539**	-.596**	-.253	-.110	-.079	-.079	-.419*	-.277	-.440*	.216	.287	-.294	.776**	.826**	1.000	.913**	.710**	.387	.484*
		Sig. (2-tailed)	.766	.715	.008	.003	.244	.617	.719	.719	.047	.211	.041	.321	.184	.184	.000	.000	.	.000	.000	.068	.023
		N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
	Composite_Strength_AdjWeight	Correlation Coefficient	-.001	-.162	-.584**	-.616**	-.292	-.203	-.175	-.079	-.482*	-.406	-.495*	.243	.256	-.321	.913**	.941**	.913**	1.000	.734**	.442*	.550**
		Sig. (2-tailed)	.996	.461	.003	.002	.176	.352	.425	.719	.020	.061	.019	.264	.238	.145	.000	.000	.000	.	.000	.035	.008
		N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
	Best_Grip_Dominant_AdjWeight	Correlation Coefficient	-.312	.182	-.249	-.343	-.331	-.169	-.127	-.191	-.684**	-.644**	-.597**	.325	.484*	-.543**	.740**	.655**	.710**	.734**	1.000	.676**	.689**
		Sig. (2-tailed)	.147	.406	.253	.109	.123	.440	.563	.383	.000	.001	.003	.130	.019	.009	.000	.001	.000	.000	.	.000	.000
		N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
	Best_UGS	Correlation Coefficient	-.516*	.228	-.114	-.232	-.195	-.071	-.048	-.223	-.567**	-.584**	-.692**	.446*	.571**	-.598**	.410	.546**	.387	.442*	.676**	1.000	.869**
		Sig. (2-tailed)	.012	.294	.604	.286	.373	.747	.829	.307	.005	.004	.000	.033	.004	.003	.052	.007	.068	.035	.000	.	.000
		N	23	23	23	23	23	23	23	23	23	22	22	23	23	22	23	23	23	23	23	23	22
	Best_FGS	Correlation Coefficient	-.483*	.364	-.133	-.373	-.376	-.249	-.205	-.242	-.697**	-.600**	-.775**	.577**	.678**	-.710**	.600**	.615**	.484*	.550**	.689**	.869**	1.000
		Sig. (2-tailed)	.023	.096	.556	.087	.085	.263	.359	.279	.000	.003	.000	.005	.001	.000	.003	.002	.023	.008	.000	.000	.
		N	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22

Nonparametric Correlations

I/I Genotype

Correlations

			Age (yrs)	Height_meter	Weight_Kg	BMI	Recurrent Faller	Number of falls past 12 months	Faller	FOF	LE_ResponseTime Best	STS_Best	RST_Best	MSL_Best_AdjHeight	SLST_Best	FSST_Best	Best_HipFlx_Dominant_AdjWeight	Best_KnExt_Dominant_AdjWeight	Best_AnkDorFlx_Dominant_AdjWeight	Composite_Strength_AdjWeight	Best_Grip_Dominant_AdjWeight	Best_UGS	Best_FGS
Spearman's rho	Age (yrs)	Correlation Coefficient	1.000	.078	-.571*	-.556*	.126	.274	.330	-.264	-.178	-.038	-.192	-.056	-.295	.095	.376	.298	.320	.376	.221	.077	.052
		Sig. (2-tailed)	.	.767	.017	.020	.629	.287	.196	.306	.494	.885	.461	.830	.250	.718	.137	.245	.210	.137	.394	.768	.844
		N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
	Height_meter	Correlation Coefficient	.078	1.000	.337	-.300	-.570*	-.364	-.291	-.371	-.138	.340	-.236	.128	.117	-.416	.084	-.037	-.071	.032	.441	.059	.212
		Sig. (2-tailed)	.767	.	.185	.241	.017	.150	.257	.143	.598	.182	.361	.624	.654	.097	.749	.888	.785	.903	.076	.821	.414
		N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
	Weight_Kg	Correlation Coefficient	-.571*	.337	1.000	.728**	.063	.008	-.053	.369	.059	.262	.159	-.181	-.094	-.034	-.471	-.395	-.566*	-.483*	.012	-.112	-.118
		Sig. (2-tailed)	.017	.185	.	.001	.810	.977	.841	.145	.823	.309	.541	.486	.720	.896	.057	.117	.018	.050	.963	.670	.653
		N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
	BMI	Correlation Coefficient	-.556*	-.300	.728**	1.000	.378	.187	.079	.712**	.203	.056	.402	-.343	-.279	.316	-.667**	-.542*	-.681**	-.664**	-.392	-.185	-.306
		Sig. (2-tailed)	.020	.241	.001	.	.135	.471	.763	.001	.434	.830	.110	.178	.278	.216	.003	.025	.003	.004	.119	.477	.232
		N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
	RecurrentFaller	Correlation Coefficient	.126	-.570*	.063	.378	1.000	.822**	.717**	.378	.094	-.220	.283	-.220	-.457	.409	-.157	-.126	-.157	-.189	-.063	-.158	-.252

	Sig. (2-tailed)	.629	.017	.810	.135	.	.000	.001	.134	.718	.395	.270	.395	.065	.103	.546	.630	.546	.468	.810	.546	.329
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Number of falls past 12 months	Correlation Coefficient	.274	-.364	.008	.187	.822**	1.000	.983**	.246	.059	-.207	.369	-.277	-.587*	.442	-.146	-.094	-.210	-.177	.020	-.236	-.248
	Sig. (2-tailed)	.287	.150	.977	.471	.000	.	.000	.342	.821	.425	.145	.281	.013	.076	.575	.718	.418	.497	.940	.361	.337
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Faller	Correlation Coefficient	.330	-.291	-.053	.079	.717**	.983**	1.000	.150	.000	-.211	.343	-.264	-.573*	.422	-.079	-.026	-.158	-.105	.053	-.224	-.211
	Sig. (2-tailed)	.196	.257	.841	.763	.001	.000	.	.566	1.000	.417	.178	.307	.016	.092	.763	.920	.544	.687	.841	.387	.417
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
FOF	Correlation Coefficient	-.264	-.371	.369	.712**	.378	.246	.150	1.000	.580*	.316	.738**	-.580*	-.519*	.659**	-.738**	-.501*	-.632**	-.685**	-.474	-.620**	-.738**
	Sig. (2-tailed)	.306	.143	.145	.001	.134	.342	.566	.	.015	.216	.001	.015	.033	.004	.001	.041	.006	.002	.054	.008	.001
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
LE_ResponseTime Best	Correlation Coefficient	-.178	-.138	.059	.203	.094	.059	.000	.580*	1.000	.456	.547*	-.240	-.363	.409	-.574*	-.529*	-.583*	-.642**	-.525*	-.447	-.429
	Sig. (2-tailed)	.494	.598	.823	.434	.718	.821	1.000	.015	.	.066	.023	.353	.152	.103	.016	.029	.014	.005	.031	.072	.086
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
STS_Best	Correlation Coefficient	-.038	.340	.262	.056	-.220	-.207	-.211	.316	.456	1.000	.355	-.451	-.447	.397	-.333	-.431	-.471	-.400	-.225	-.539*	-.424
	Sig. (2-tailed)	.885	.182	.309	.830	.395	.425	.417	.216	.066	.	.162	.069	.072	.115	.191	.084	.057	.112	.384	.026	.090
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
RST_Best	Correlation Coefficient	-.192	-.236	.159	.402	.283	.369	.343	.738**	.547*	.355	1.000	-.757**	-.678**	.775**	-.657**	-.566*	-.603*	-.674**	-.512*	-.896**	-.909**
	Sig. (2-tailed)	.461	.361	.541	.110	.270	.145	.178	.001	.023	.162	.	.000	.003	.000	.004	.018	.010	.003	.036	.000	.000
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
MSL_Best_AdjHeight	Correlation Coefficient	-.056	.128	-.181	-.343	-.220	-.277	-.264	-.580*	-.240	-.451	-.757**	1.000	.805**	-.846**	.618**	.498*	.485*	.569*	.510*	.667**	.779**
	Sig. (2-tailed)	.830	.624	.486	.178	.395	.281	.307	.015	.353	.069	.000	.	.000	.000	.008	.042	.048	.017	.037	.003	.000

	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
SLST_Best	Correlation Coefficient	-.295	.117	-.094	-.279	-.457	-.587*	-.573*	-.519*	-.363	-.447	-.678**	.805**	1.000	-.775**	.533*	.569*	.632**	.610**	.404	.587*	.617**
	Sig. (2-tailed)	.250	.654	.720	.278	.065	.013	.016	.033	.152	.072	.003	.000	.	.000	.027	.017	.006	.009	.108	.013	.008
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
FSST_Best	Correlation Coefficient	.095	-.416	-.034	.316	.409	.442	.422	.659**	.409	.397	.775**	-.846**	-.775**	1.000	-.600*	-.424	-.449	-.534*	-.627**	-.645**	-.733**
	Sig. (2-tailed)	.718	.097	.896	.216	.103	.076	.092	.004	.103	.115	.000	.000	.000	.	.011	.090	.071	.027	.007	.005	.001
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Best_HipFlx_Dominant_AdjWeight	Correlation Coefficient	.376	.084	-.471	-.667**	-.157	-.146	-.079	-.738**	-.574*	-.333	-.657**	.618**	.533*	-.600*	1.000	.843**	.809**	.941**	.630**	.396	.507*
	Sig. (2-tailed)	.137	.749	.057	.003	.546	.575	.763	.001	.016	.191	.004	.008	.027	.011	.	.000	.000	.000	.007	.115	.038
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Best_KnExt_Dominant_AdjWeight	Correlation Coefficient	.298	-.037	-.395	-.542*	-.126	-.094	-.026	-.501*	-.529*	-.431	-.566*	.498*	.569*	-.424	.843**	1.000	.875**	.941**	.605*	.351	.370
	Sig. (2-tailed)	.245	.888	.117	.025	.630	.718	.920	.041	.029	.084	.018	.042	.017	.090	.000	.	.000	.000	.010	.167	.144
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Best_AnkDorFlx_Dominant_AdjWeight	Correlation Coefficient	.320	-.071	-.566*	-.681**	-.157	-.210	-.158	-.632**	-.583*	-.471	-.603*	.485*	.632**	-.449	.809**	.875**	1.000	.936**	.525*	.406	.382
	Sig. (2-tailed)	.210	.785	.018	.003	.546	.418	.544	.006	.014	.057	.010	.048	.006	.071	.000	.000	.	.000	.031	.106	.130
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Composite_Strength_AdjWeight	Correlation Coefficient	.376	.032	-.483*	-.664**	-.189	-.177	-.105	-.685**	-.642**	-.400	-.674**	.569*	.610**	-.534*	.941**	.941**	.936**	1.000	.635**	.423	.468
	Sig. (2-tailed)	.137	.903	.050	.004	.468	.497	.687	.002	.005	.112	.003	.017	.009	.027	.000	.000	.000	.	.006	.090	.058
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Best_Grip_Dominant_AdjWeight	Correlation Coefficient	.221	.441	.012	-.392	-.063	.020	.053	-.474	-.525*	-.225	-.512*	.510*	.404	-.627**	.630**	.605*	.525*	.635**	1.000	.245	.358
	Sig. (2-tailed)	.394	.076	.963	.119	.810	.940	.841	.054	.031	.384	.036	.037	.108	.007	.007	.010	.031	.006	.	.342	.158
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17

	Best_UGS	Correlation Coefficient	.077	.059	-.112	-.185	-.158	-.236	-.224	-.620**	-.447	-.539*	-.896**	.667**	.587*	-.645**	.396	.351	.406	.423	.245	1.000	.945**
		Sig. (2-tailed)	.768	.821	.670	.477	.546	.361	.387	.008	.072	.026	.000	.003	.013	.005	.115	.167	.106	.090	.342	.	.000
		N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
	Best_FGS	Correlation Coefficient	.052	.212	-.118	-.306	-.252	-.248	-.211	-.738**	-.429	-.424	-.909**	.779**	.617**	-.733**	.507*	.370	.382	.468	.358	.945**	1.000
		Sig. (2-tailed)	.844	.414	.653	.232	.329	.337	.417	.001	.086	.090	.000	.000	.008	.001	.038	.144	.130	.058	.158	.000	.
		N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17