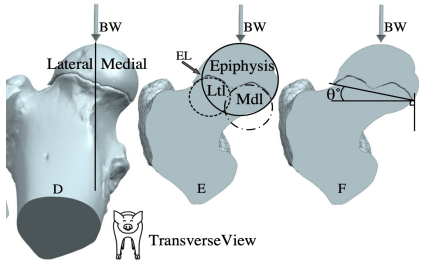
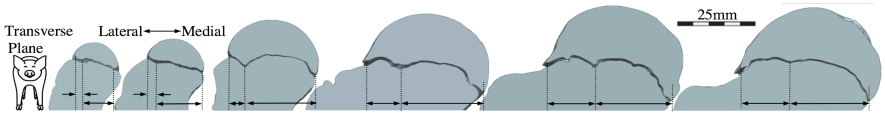
Transversel Plane Epiphyseal Cupping Radii [mm]

Age [Days]	Epiphysis	Medial	Lateral	Difference
120 1R	13.95	12.65	4.65	8
120 2R	13.05	13.75	4.4	9.35
120 3R	14.65	9.65	3.8	5.85
120 4R	14.7	13.5	4.15	9.35
1201L	13.85	11.45	4.4	7.05
120 2L	12.9	11.55	5.7	5.85
120 3L	14.65	11	5.65	5.35
120 4L	14.1	12.8	4.3	8.5
Mean	13.98	12.04	4.63	7.41
SD	0.71	1.38	0.69	1.62

Age [Days]	Epiphysis	Medial	Lateral	Difference
900 1R	18.7	11.45	10.05	1.4
900 2R	17.1	9.75	8.7	1.05
900 3R	18.4	9.3	9.55	-0.25
9001L	19.1	9.5	8.3	1.2
900 2L	17.55	10.7	7.5	3.2
900 3L	18.45	9.3	8.55	0.75
Mean	18.22	10.00	8.78	1.23
SD	0.75	0.88	0.91	1.13





Epiphyseal Articular Radius 120 to 900 Days

Test For Normality 120 Days

Descriptive Statistics

	Epiphysis
Mean	13.98125
Standard Erro	0.2492735
Median	14.025
Mode	14.65
Standard Dev	0.70505192
Sample Varia	0.49709821
Kurtosis	-1.0340776
Skewness	-0.5993629
Range	1.8
Maximum	14.7
Minimum	12.9
Sum	111.85
Count	8
Geometric M	13.9654356
Harmonic Me	13.9493736
AAD	0.54375
MAD	0.625
IQR	1

Box Plot

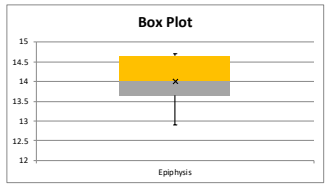
	Epiphysis
Min	12.9
Q1-Min	0.75
Med-Q1	0.375
Q3-Med	0.625
Max-Q3	0.05
Mean	13.98125
Min	12.9
Q1	13.65
Median	14.025
Q3	14.65
Max	14.7
Mean	13.98125
Grand Min	0
Outliers	

Shapiro-Wilk Test

	Epiphysis
W-stat	0.87383696
p-value	0.16427289
alpha	0.05
normal	yes

d'Agostino-Pearson

DA-stat	1.12268053
p-value	0.57044401
alpha	0.05
normal	yes



Test For Normality 900 Days

Descriptive Statistics

	Epiphysis
Mean	18.2166667
Standard Erro	0.30514113
Median	18.425
Mode	#N/A
Standard Dev	0.74744008
Sample Varia	0.55866667
Kurtosis	-0.8226174
Skewness	-0.6233887
Range	2
Maximum	19.1
Minimum	17.1
Sum	109.3
Count	6
Geometric M	18.2037306
Harmonic Me	18.1906426
AAD	0.59444444
MAD	0.475
IQR	0.875

Box Plot

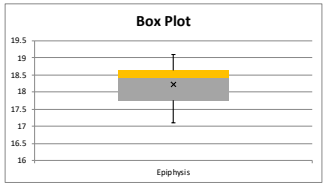
	Epiphysis
Min	17.1
Q1-Min	0.6625
Med-Q1	0.6625
Q3-Med	0.2125
Max-Q3	0.4625
Mean	18.2166667
Min	17.1
Q1	17.7625
Median	18.425
Q3	18.6375
Max	19.1
Mean	18.2166667
Grand Min	0
Outliers	

Shapiro-Wilk Test

	Epiphysis
W-stat	0.93162236
p-value	0.59268765
alpha	0.05
normal	yes

d'Agostino-Pearson

DA-stat	0.76736967
p-value	0.68134613
alpha	0.05
normal	yes



Epiphyseal Articular Radius 120 to 900 Days

T Test: Two Independent Samples

SUMMARY — Hyp Mean D 0

Groups	*Count*	*Mean*	*Variance*	*Cohen d*
Epiphysis	6	18.2166667	0.55866667	
Epiphysis	8	13.98125	0.49709821	
Pooled		4.23541667	0.52275174	5.85798694

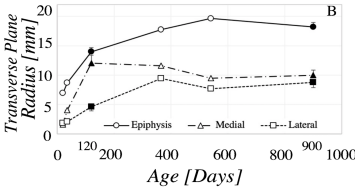
Effect size		Effect size	
Choen's *d* score		Choen's *r* score	
0.2	Small	0.1	Small
0.5	Medium	0.3	Medium
0.8	Large	0.5	Large

T TEST: Equal Variances — Alpha 0.05

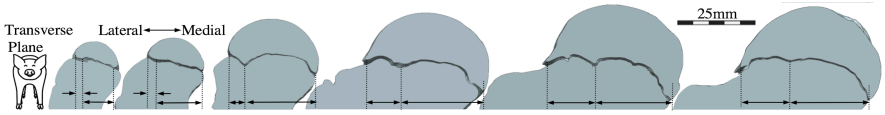
	std err	*t-stat*	*df*	*p-value*	*t-crit*	*lower*	*upper*	*sig*	*effect r*
One Tail	0.39047312	10.8468841	12	7.3894E-08	1.78228756			yes	0.95259992
Two Tail	0.39047312	10.8468841	12	1.4779E-07	2.17881283	3.38464883	5.08618451	yes	0.95259992

T TEST: Unequal Variances — Alpha 0.05

	std err	*t-stat*	*df*	*p-value*	*t-crit*	*lower*	*upper*	*sig*	*effect r*
One Tail	0.39401572	10.7493596	10.5455803	2.5874E-07	1.80299272			yes	0.95727087
Two Tail	0.39401572	10.7493596	10.5455803	5.1747E-07	2.21261206	3.36361273	5.1072206	yes	0.95727087



The average radius of epiphyseal articular curvature increased from 120-days-old (13.98 ± 0.71 mm) to 900-days-old (18.22 ± 0.75 mm)
This difference (4.24 mm), 95% CI [3.36, 5.10] was statistically significant($t(10.55) = 10.75$, $P < .001$, with a large effect size($d = 5.86$).



Medial Radius vs Lateral Radius 120 Days

Descriptive Statistics

	Difference
Mean	7.4125
Standard Erro	0.57171031
Median	7.525
Mode	9.35
Standard Dev	1.61704095
Sample Varia	2.61482143
Kurtosis	-1.9045607
Skewness	-0.0187133
Range	4
Maximum	9.35
Minimum	5.35
Sum	59.3
Count	8
Geometric M	7.25476494
Harmonic Me	7.09728872
AAD	1.3875
MAD	1.675
IQR	2.8625

Box Plot

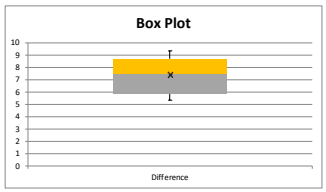
	Difference
Min	5.35
Q1-Min	0.5
Med-Q1	1.675
Q3-Med	1.1875
Max-Q3	0.6375
Mean	7.4125
Min	5.35
Q1	5.85
Median	7.525
Q3	8.7125
Max	9.35
Mean	7.4125
Grand Min	0
Outliers	

Shapiro-Wilk Test

	Difference
W-stat	0.89391838
p-value	0.25439473
alpha	0.05
normal	yes

d'Agostino-Pearson

DA-stat	1.65467279
p-value	0.4372123
alpha	0.05
normal	yes



Medial Radius vs Lateral Radius 120 Days

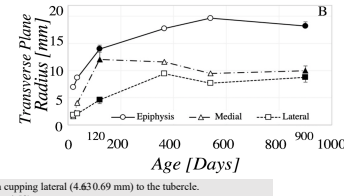
T Test: Two Paired Samples

SUMMARY — Alpha 0.05 — Hyp Mean D 0

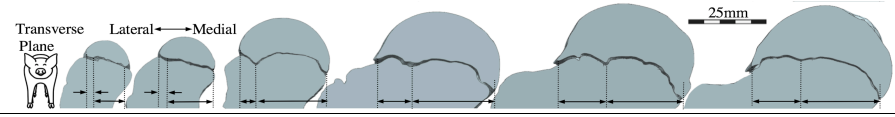
Groups	*Count*	*Mean*	*Std Dev*	*Std Err*	*t*	*df*	*Cohen d*	*Effect r*
Medial	8	12.04375	1.38291553					
Lateral	8	4.63125	0.68865163					
Difference	8	7.4125	1.61704095	0.57171031	12.9654825	7	4.58399029	0.97980799

T TEST

	p-value	*t-crit*	*lower*	*upper*	*sig*
One Tail	1.8883E-06	1.89457861			yes
Two Tail	3.7767E-06	2.36462425	6.06061994	8.76438006	yes



The 120-day-old average radius of epiphyseal cupping medial (12.04 ± 1.38 mm) with respect to the tubercle was larger than cupping lateral (4.63 0.69 mm) to the tubercle.
This difference (7.41 mm), 95% CI [6.06, 8.74] was statistically significant($t(7) = 12.97$, $P < .001$, with a large effect size ($d = 4.58$).



Medial vs Lateral 900 Days

Descriptive Statistics

	Difference
Mean	1.225
Standard Erro	0.4605703
Median	1.125
Mode	#N/A
Standard Dev	1.12816222
Sample Varia	1.27275
Kurtosis	2.39298162
Skewness	0.9166926
Range	3.45
Maximum	3.2
Minimum	-0.25
Sum	7.35
Count	6
Geometric M	#NUM!
Harmonic Me	#NUM!
AAD	0.71666667
MAD	0.325
IQR	0.525

Box Plot

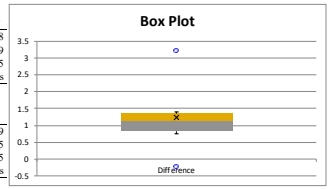
	Difference
Min	0.75
Q1-Min	0.075
Med-Q1	0.3
Q3-Med	0.225
Max-Q3	0.05
Mean	1.225
Min	0.75
Q1	0.825
Median	1.125
Q3	1.35
Max	1.4
Mean	1.225
Grand Min	0
Outliers	-0.25, 3.2

Shapiro-Wilk Test

	Difference
W-stat	0.91568068
p-value	0.47480849
alpha	0.05
normal	yes

d'Agostino-Pearson

DA-stat	3.06615459
p-value	0.21587035
alpha	0.05
normal	yes



Medial Radius vs Lateral Radius 900 Days

T Test: Two Paired Samples

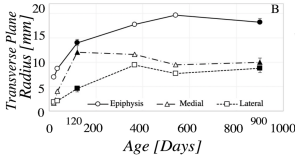
SUMMARY — Alpha 0.05 — Hyp Mean D 0

Groups	Count	Mean	Std Dev	Std Err	t	df	Cohen d	Effect r
Medial	6	10	0.88147603					
Lateral	6	8.775	0.90925794					
Difference	6	1.225	1.12816222	0.4605703	2.65974598	5	1.08583675	0.76543815

T TEST

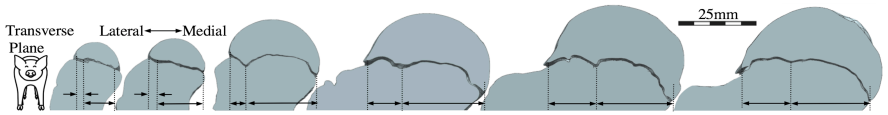
	p-value	t-crit	lower	upper	sig
One Tail	0.0224488	2.01504837			yes
Two Tail	0.04489761	2.57058184	0.04106636	2.40893364	yes

Effect size Choen's d score		Effect size Choen's r score	
0.2	Small	0.1	Small
0.5	Medium	0.3	Medium
0.8	Large	0.5	Large



The 900-day-old average radius of epiphyseal cupping medial (10.0 ± 0.88 mm) with respect to the tubercle was larger than lateral (8.78 ± 0.91 mm).
This difference (1.23 mm), 95% CI [0.04, 2.41] was statistically significant ($t(5) = 2.66$, $P = .045$, with a large effect size ($d = 1.09$).

NOTE: *P-Value, may not be significant at that P-value*



Medial Radius 120 to 900 Days

Test For Normality 120 Days

Descriptive Statistics

	Medial
Mean	12.04375
Standard Erro	0.48893447
Median	12.1
Mode	#N/A
Standard Dev	1.38291553
Sample Varia	1.91245536
Kurtosis	-0.4342736
Skewness	-0.4661223
Range	4.1
Maximum	13.75
Minimum	9.65
Sum	96.35
Count	8
Geometric M	11.9716925
Harmonic Me	11.8971475
AAD	1.13125
MAD	0.9
IQR	1.6375

Box Plot

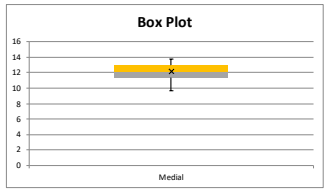
	Medial
Min	9.65
Q1-Min	1.6875
Med-Q1	0.7625
Q3-Med	0.875
Max-Q3	0.775
Mean	12.04375
Min	9.65
Q1	11.3375
Median	12.1
Q3	12.975
Max	13.75
Mean	12.04375
Grand Min	0
Outliers	

Shapiro-Wilk Test

	Medial
W-stat	0.95204225
p-value	0.73179538
alpha	0.05
normal	yes

d'Agostino-Pearson

DA-stat	0.47009994
p-value	0.79053134
alpha	0.05
normal	yes



Test For Normality 900 Days

Descriptive Statistics

	Medial
Mean	10
Standard Erro	0.35986108
Median	9.625
Mode	9.3
Standard Dev	0.88147603
Sample Varia	0.777
Kurtosis	-0.2124422
Skewness	1.1235104
Range	2.15
Maximum	11.45
Minimum	9.3
Sum	60
Count	6
Geometric M	9.96889979
Harmonic Me	9.93911938
AAD	0.71666667
MAD	0.325
IQR	1.1125

Box Plot

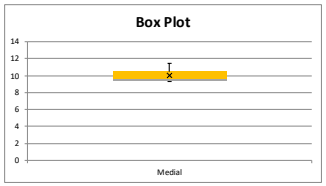
	Medial
Min	9.3
Q1-Min	0.05
Med-Q1	0.275
Q3-Med	0.8375
Max-Q3	0.9875
Mean	10
Min	9.3
Q1	9.35
Median	9.625
Q3	10.4625
Max	11.45
Mean	10
Grand Min	0
Outliers	

Shapiro-Wilk Test

	Medial
W-stat	0.83161441
p-value	0.11092311
alpha	0.05
normal	yes

d'Agostino-Pearson

DA-stat	1.78207931
p-value	0.41022903
alpha	0.05
normal	yes



Medial Radius 120 to 900 Days

T Test: Two Independent Samples

SUMMARY — Hyp Mean D 0

Groups	Count	Mean	Variance	Cohen d
Medial	8	12.04375	1.91245536	
Medial	6	10	0.777	
Pooled		2.04375	1.43934896	1.70351013

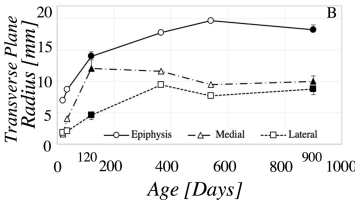
Effect size Choen's d score		Effect size Choen's r score	
0.2	Small	0.1	Small
0.5	Medium	0.3	Medium
0.8	Large	0.5	Large

T TEST: Equal Variances — Alpha 0.05

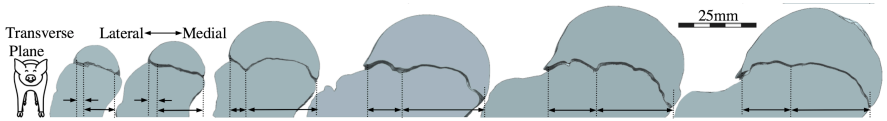
	std err	t-stat	df	p-value	t-crit	lower	upper	sig	effect r
One Tail	0.64792755	3.15428784	12	0.00415426	1.78228756			yes	0.67326911
Two Tail	0.64792755	3.15428784	12	0.00830851	2.17881283	0.63203714	3.45546286	yes	0.67326911

T TEST: Unequal Variances — Alpha 0.05

	std err	t-stat	df	p-value	t-crit	lower	upper	sig	effect r
One Tail	0.60708889	3.36647571	11.7931289	0.00286786	1.78489611			yes	0.70003947
Two Tail	0.60708889	3.36647571	11.7931289	0.00573572	2.18305934	0.71843893	3.36906107	yes	0.70003947



The average radius of epiphyseal cupping medial with respect to the tubercle decreased from 120-days-old (12.04 ± 1.38 mm) to 900-day-old group (10.00 ± 0.88 mm).
This difference (2.04 mm), 95% CI [0.72, 3.37] was statistically significant ($t(11.79) = 3.37$, $P = .006$, with a large effect size ($d = 1.70$).



Lateral Radius 120 to 900 Days

Test For Normality 120 Days

Descriptive Statistics

	Lateral
Mean	4.63125
Standard Erro	0.24347512
Median	4.4
Mode	4.4
Standard Dev	0.68865163
Sample Varia	0.47424107
Kurtosis	-0.4323306
Skewness	0.89302285
Range	1.9
Maximum	5.7
Minimum	3.8
Sum	37.05
Count	8
Geometric M	4.5887851
Harmonic Me	4.54879156
AAD	0.5265625
MAD	0.25
IQR	0.6375

Box Plot

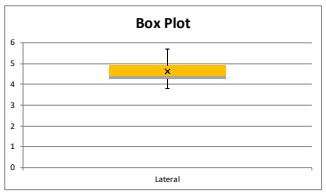
	Lateral
Min	3.8
Q1-Min	0.4625
Med-Q1	0.1375
Q3-Med	0.5
Max-Q3	0.8
Mean	4.63125
Min	3.8
Q1	4.2625
Median	4.4
Q3	4.9
Max	5.7
Mean	4.63125
Grand Min	0
Outliers	

Shapiro-Wilk Test

	Lateral
W-stat	0.85563244
p-value	0.10858251
alpha	0.05
normal	yes

d'Agostino-Pearson

DA-stat	1.49507796
p-value	0.47353049
alpha	0.05
normal	yes



Test For Normality 900 Days

Descriptive Statistics

	Lateral
Mean	8.775
Standard Erro	0.371203
Median	8.625
Mode	#N/A
Standard Dev	0.90925794
Sample Varia	0.82675
Kurtosis	-0.412978
Skewness	0.13828122
Range	2.55
Maximum	10.05
Minimum	7.5
Sum	52.65
Count	6
Geometric M	8.73572645
Harmonic Me	8.69651699
AAD	0.68333333
MAD	0.625
IQR	0.975

Box Plot

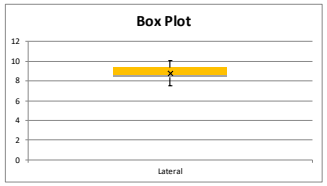
	Lateral
Min	7.5
Q1-Min	0.8625
Med-Q1	0.2625
Q3-Med	0.7125
Max-Q3	0.7125
Mean	8.775
Min	7.5
Q1	8.3625
Median	8.625
Q3	9.3375
Max	10.05
Mean	8.775
Grand Min	0
Outliers	

Shapiro-Wilk Test

	Lateral
W-stat	0.97123294
p-value	0.90061213
alpha	0.05
normal	yes

d'Agostino-Pearson

DA-stat	0.08305214
p-value	0.95932433
alpha	0.05
normal	yes



Lateral Radius 120 to 900 Days

T Test: Two Independent Samples

SUMMARY — Hyp Mean D: 0

Groups	*Count*	*Mean*	*Variance*	*Cohen d*
Lateral	6	8.775	0.82675	
Lateral	8	4.63125	0.47424107	
Pooled		4.14375	0.62111979	5.25782179

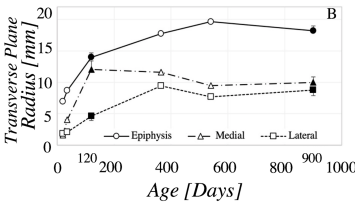
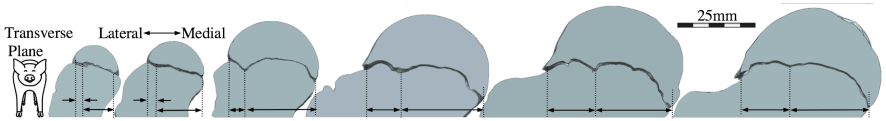
Effect size		Effect size	
Choen's *d* score		Choen's *r* score	
0.2	Small	0.1	Small
0.5	Medium	0.3	Medium
0.8	Large	0.5	Large

T TEST: Equal Variances — Alpha: 0.05

	std err	*t-stat*	*df*	*p-value*	*t-crit*	*lower*	*upper*	*sig*	*effect r*
One Tail	0.42562888	9.73559418	12	2.3901E-07	1.78228756			yes	0.94213656
Two Tail	0.42562888	9.73559418	12	4.7802E-07	2.17881283	3.21638435	5.07111565	yes	0.94213656

T TEST: Unequal Variances — Alpha: 0.05

	std err	*t-stat*	*df*	*p-value*	*t-crit*	*lower*	*upper*	*sig*	*effect r*
One Tail	0.4439277	9.3342903	9.03334098	3.0838E-06	1.83234293			yes	0.95187264
Two Tail	0.4439277	9.3342903	9.03334098	6.1675E-06	2.26088506	3.1400805	5.1474195	yes	0.95187264



The average radius of epiphyseal cupping lateral with respect to the tubercle increased from 120-days-old (4.63 ± .069 mm) to 900-days-old (8.78 ± 0.91 mm)
This difference (4.14 mm), 95% CI [3.14, 5.15] was statistically significant(9.03) = 9.33, $P < .001$, with a large effect size($d = 5.26$).