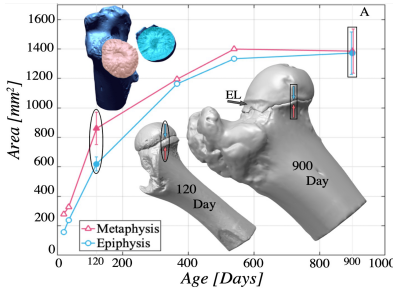
Surface Area [mm^2]

Age [Days]	Metaphysis	Epiphysis	Difference
120 1R	868.96	619.86	249.10
120 2R	721.70	555.22	166.49
120 3R	1056.99	624.93	432.06
120 4R	885.81	673.86	211.96
1201L	840.50	609.00	231.51
120 2L	718.56	551.21	167.35
120 3L	930.70	646.75	283.95
120 4L	862.06	675.99	186.07
Mean	860.66	619.60	241.06
SD	109.58	47.55	87.29

Age [Days]	Metaphysis	Epiphysis	Difference
900 1R	1578.91	1528.33	50.58
900 2R	1240.00	1238.47	1.54
900 3R	1346.13	1342.45	3.68
9001L	1561.82	1565.61	-3.79
900 2L	1249.28	1227.57	21.71
900 3L	1336.37	1330.49	5.88
Mean	1385.42	1372.15	13.27
SD	149.79	143.67	20.19



Metaphysis vs Epiphysis Surface Area 120 Day

Descriptive Statistics

	Difference
Mean	241.1
Standard Erro	30.8627354
Median	221.7
Mode	#N/A
Standard Dev	87.292998
Sample Varia	7620.06749
Kurtosis	3.39336094
Skewness	1.72966043
Range	265.5711
Maximum	432.1
Minimum	166.5
Sum	1928.5
Count	8
Geometric M	229.788603
Harmonic Me	220.722017
AAD	60.4809719
MAD	45.02125
IQR	76.41975

Box Plot

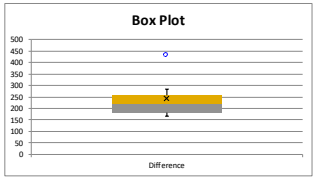
	Difference
Min	166.4865
Q1-Min	14.901525
Med-Q1	40.342675
Q3-Med	36.077075
Max-Q3	26.137725
Mean	241.1
Min	166.4865
Q1	181.388025
Median	221.7
Q3	257.807775
Max	283.9455
Mean	241.1
Grand Min	0
Outliers	432.1

Shapiro-Wilk Test

	Difference
W-stat	0.82445609
p-value	0.05196547
alpha	0.05
normal	yes

d'Agostino-Pearson

DA-stat	10.5396777
p-value	0.00514444
alpha	0.05
normal	no



Metaphysis vs Epiphysis Surface Area 120 Day

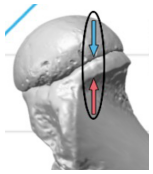
Wilcoxon Signed-Rank Test for Paired Samples

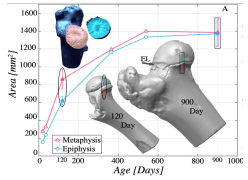
	Metaphysis	Epiphysis
median	865.51	622.40
count	8	243.11
# unequal	8	
T+	0	
T-	36	
T	0	
	one tail	two tail
alpha	0.05	
mean	18	
std dev	7.14142843	ties
z-score	2.52050415	
effect r	0.63012604	
T-crit	6.25339555	4.00305748
p-value	0.00585934	0.01171869
sig (norm)	yes	yes
T-crit	5	3
sig (table)	yes	yes
p-value	0.00390625	0.0078125
sig (exact)	yes	yes

Hodges-Lehmann estimation for the difference betweenpopulation medians

Walsh Averages (row+column)/2

	249.10	166.49	432.06	211.96	231.51	167.35	283.95	186.07
249.10	249.0976	207.7926	4.0	230.5276	240.3026	208.2226	266.5226	217.5826
166.49		166.48825	299.27325	189.22325	198.99825	166.91825	225.21825	176.27825
432.06			432.0588	322.0088	331.7838	299.7038	358.0038	309.0638
211.96				211.95775	221.73275	189.65275	247.95275	199.01275
231.51					231.50795	199.42795	257.72795	208.78795
167.35						167.35115	225.65115	176.71115
283.95							283.94775	235.00775
186.07								186.0683





Calculate the 95% CI

alpha	0.05
T-crit	3.00 SRINV(alpha, N)
alpha	0.04 SRDIST(T-crit, N)
lower	166.92 SMALL(H7:V21,T-crit)
upper	331.78 LARGE(H7:V21,T-crit)
median	223.48 MEDIAN(H7:V21)
T-crit+	4.00 T-crit + 1
alpha	0.05 SRDIST(T-crit+, N)
lower	167.35 SMALL(H7:V21,T-crit+)
upper	322.01 LARGE(H7:V21,T-crit+)

The 95%CI for the median is:
95%CI = [166.92, 331.78]

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 120-day-old average metaphyseal growth plate surface area (Mdn = 865.51 mm^2) was larger than the average epiphyseal subchondral bone plate surface area (Mdn = 622.40 mm^2). A Wilcoxon signed-rank test indicated this difference (243.11 mm^2) was statistically significant, 95% CI [166.92, 331.78], T = 0, z = 2.52 P =.008, with a large effect size (r = .63).

Metaphysis vs Epiphysis Surface Area 900 Day

Descriptive Statistics

	Difference
Mean	13.27
Standard Erro	8.2430503
Median	4.78
Mode	#N/A
Standard Dev	20.1912672
Sample Varia	407.68727
Kurtosis	2.41891382
Skewness	1.62864148
Range	54.3713
Maximum	50.58
Minimum	-3.79
Sum	79.59
Count	6
Geometric M	#NUM!
Harmonic Me	#NUM!
AAD	15.2518333
MAD	5.90925
IQR	15.677925

Box Plot

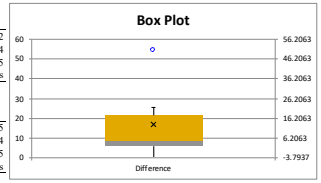
	Difference
Min	0
Q1-Min	5.867
Med-Q1	2.70765
Q3-Med	12.970275
Max-Q3	3.957075
Mean	17.06
Min	-3.7937
Q1	2.0733
Median	4.78
Q3	17.751225
Max	21.7083
Mean	13.27
Grand Min	-3.7937
Outliers	54.37

Shapiro-Wilk Test

	Difference
W-stat	0.81724562
p-value	0.08352664
alpha	0.05
normal	yes

d'Agostino-Pearson

DA-stat	5.64433985
p-value	0.05947674
alpha	0.05
normal	yes



Metaphysis vs Epiphysis Surface Area 900 Day

T Test: Two Paired Samples

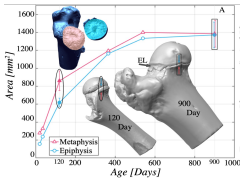
SUMMARY Alpha 0.05 Hyp Mean Di 0

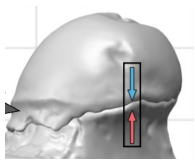
Groups	*Count*	*Mean*	*Std Dev*	*Std Err*	*t*	*df*	*Cohen d*	*Effect r*
Metaphysis	6	1385.42	149.789139					
Epiphysis	6	1372.15	143.674568					
Difference	6	13.27	20.1912672	8.243050301	1.60925865	5	0.65697709	0.58413491

T TEST

	p-value	*t-crit*	*lower*	*upper*	*sig*
One Tail	0.0842368	2.01504837			no
Two Tail	0.16847359	2.57058184	-7.9242354	34.45463537	no

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





No difference could be detected between the 900-day-old average metaphyseal growth plate surface area (1385.42 ± 149.79 mm^2) and averag epiphyseal subchondral bone plate surface area (1372.15 ± 143.67 mm^2). The 13.27 mm^2 difference, 95% CI [-7.92, 34.45] was not statistically significant, t(5) = 1.61, P = .17, with a medium effect size (d = .68).

Metaphysis Surface Area 120 to 900 Days

Test For Normality 120 Day

Descriptive Statistics

	Metaphysis
Mean	860.66
Standard Erro	38.7440265
Median	865.51
Mode	#N/A
Standard Dev	109.584656
Sample Varia	12008.7967
Kurtosis	0.54661247
Skewness	0.34259585
Range	338.427
Maximum	1056.99
Minimum	718.56
Sum	6885.29
Count	8
Geometric M	854.604707
Harmonic Me	848.59885
AAD	75.3033438
MAD	45.09755
IQR	86.2294

Box Plot

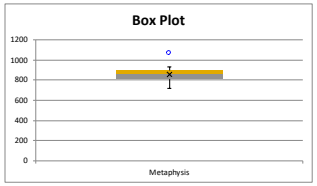
	Metaphysis
Min	718.5637
Q1-Min	92.2405
Med-Q1	54.705
Q3-Med	31.5244
Max-Q3	33.6663
Mean	860.66
Min	718.5637
Q1	810.8042
Median	865.51
Q3	897.0336
Max	930.6999
Mean	860.66
Grand Min	0
Outliers	1056.99

Shapiro-Wilk Test

	Metaphysis
W-stat	0.92732037
p-value	0.4920139
alpha	0.05
normal	yes

d'Agostino-Pearson

DA-stat	0.3437413
p-value	0.84208809
alpha	0.05
normal	yes



Test For Normality 900 Day

Descriptive Statistics

	Metaphysis
Mean	1385.42
Standard Erro	61.511601
Median	1341.25
Mode	#N/A
Standard Dev	149.789139
Sample Varia	22436.7863
Kurtosis	-1.8438555
Skewness	0.62098344
Range	338.9055
Maximum	1578.91
Minimum	1240.00
Sum	8312.51
Count	6
Geometric M	1378.84009
Harmonic Me	1372.46208
AAD	123.297178
MAD	96.6044
IQR	236.841925

Box Plot

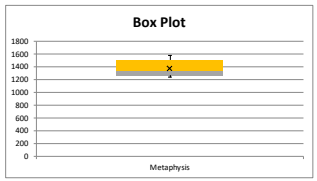
	Metaphysis
Min	1240.0037
Q1-Min	31.050075
Med-Q1	70.193675
Q3-Med	166.64825
Max-Q3	71.0135
Mean	1385.42
Min	1240.0037
Q1	1271.05378
Median	1341.25
Q3	1507.8957
Max	1578.9092
Mean	1385.42
Grand Min	0
Outliers	

Shapiro-Wilk Test

	Metaphysis
W-stat	0.83739797
p-value	0.12403365
alpha	0.05
normal	yes

d'Agostino-Pearson

DA-stat	1.66180367
p-value	0.43565622
alpha	0.05
normal	yes



Metaphysis Surface Area 120 to 900 Days

T Test: Two Independent Samples

SUMMARY			Hyp Mean D	0
Groups	*Count*	*Mean*	*Variance*	*Cohen d*
Metaphysis	6	1385.42	22436.7863	
Metaphysis	8	860.66	12008.7967	
Pooled		524.76	16353.7924	4.103446346

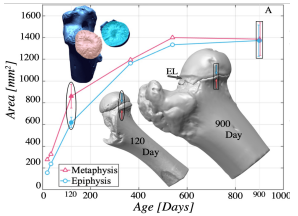
Effect size		Effect size	
Choen's *d* score		Choen's *r* score	
0.2	Small	0.1	Small
0.5	Medium	0.3	Medium
0.8	Large	0.5	Large

T TEST: Equal Variances — Alpha 0.05

	std err	*t-stat*	*df*	*p-value*	*t-crit*	*lower*	*upper*	*sig*	*effect r*
One Tail	69.0641449	7.59810621	12	3.17365E-06	1.78228756			yes	0.90989596
Two Tail	69.0641449	7.59810621	12	6.3473E-06	2.17881283	374.278863	675.234553	yes	0.90989596

T TEST: Unequal Variances — Alpha 0.05

	std err	*t-stat*	*df*	*p-value*	*t-crit*	*lower*	*upper*	*sig*	*effect r*
One Tail	72.3917397	7.24884788	8.80630587	2.69965E-05	1.83771401			yes	0.92545278
Two Tail	72.3917397	7.24884788	8.80630587	5.3993E-05	2.26976451	360.444507	689.06891	yes	0.92545278



The average metaphyseal growth plate surface area increased from 120-days-old (860.66 ± 109.58 mm) to 900-days-old (1385.42 ± 149.79 mm²).
This difference (524.76 mm²), 95% CI [360.44, 689.17] was statistically significant t (8.81) = 7.25, P < .001, with a large effect size (d = 4.10).

Epiphysis Surface Area 120 to 900 Days

Test For Noramality 120 Days

Descriptive Statistics

	Epiphysis
Mean	619.60
Standard Erro	16.810421
Median	622.40
Mode	#N/A
Standard Dev	47.5459789
Sample Varia	2260.62011
Kurtosis	-0.9821891
Skewness	-0.4055996
Range	124.7806
Maximum	675.99
Minimum	551.21
Sum	4956.83
Count	8
Geometric M	617.976379
Harmonic Me	616.321468
AAD	35.8459156
MAD	37.90635
IQR	57.97665

Box Plot

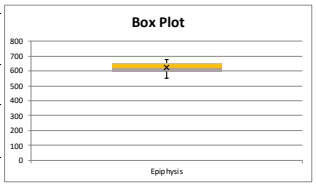
	Epiphysis
Min	551.2114
Q1-Min	44.34175
Med-Q1	26.8457
Q3-Med	31.13095
Max-Q3	22.4622
Mean	619.60
Min	551.2114
Q1	595.55315
Median	622.40
Q3	653.5298
Max	675.992
Mean	619.60
Grand Min	0
Outliers	

Shapiro-Wilk Test

	Epiphysis
W-stat	0.90883364
p-value	0.34592346
alpha	0.05
normal	yes

d'Agostino-Pearson

DA-stat	0.73072827
p-value	0.69394391
alpha	0.05
normal	yes



Test For Normality 900 Days

Descriptive Statistics

	Epiphysis
Mean	1372.15
Standard Erro	58.6548968
Median	1336.47
Mode	#N/A
Standard Dev	143.674568
Sample Varia	20642.3815
Kurtosis	-1.7227666
Skewness	0.56039678
Range	338.0382
Maximum	1565.61
Minimum	1227.57
Sum	8232.92
Count	6
Geometric M	1366.01945
Harmonic Me	1360.04637
AAD	116.546011
MAD	103.44615
IQR	220.38805

Box Plot

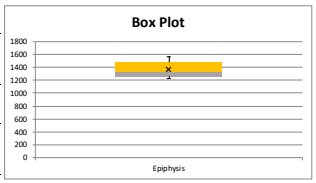
	Epiphysis
Min	1227.5741
Q1-Min	33.897825
Med-Q1	74.994575
Q3-Med	145.393475
Max-Q3	83.752325
Mean	1372.15
Min	1227.5741
Q1	1261.47193
Median	1336.47
Q3	1481.85998
Max	1565.6123
Mean	1372.15
Grand Min	0
Outliers	

Shapiro-Wilk Test

	Epiphysis
W-stat	0.87067221
p-value	0.22889766
alpha	0.05
normal	yes

d'Agostino-Pearson

DA-stat	1.41907753
p-value	0.49187101
alpha	0.05
normal	yes



Epiphysis Surface Area 120 to 900 Days

T Test: Two Independent Samples

SUMMARY			Hyp Mean D	0
Groups	*Count*	*Mean*	*Variance*	*Cohen d*
Epiphysis	6	1372.15	20642.3815	
Epiphysis	8	619.60	2260.62011	
Pooled		752.55	9919.68737	7.555899334

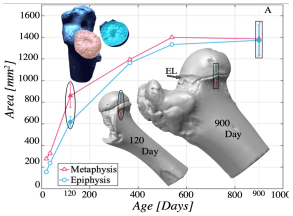
Effect size		Effect size	
Choen's *d* score		Choen's *r* score	
0.2	Small	0.1	Small
0.5	Medium	0.3	Medium
0.8	Large	0.5	Large

T TEST: Equal Variances — Alpha 0.05

	std err	*t-stat*	*df*	*p-value*	*t-crit*	*lower*	*upper*	*sig*	*effect r*
One Tail	53.7888664	13.9908069	12	4.29785E-09	1.78228756			yes	0.97068853
Two Tail	53.7888664	13.9908069	12	8.59569E-09	2.17881283	635.353774	869.745518	yes	0.97068853

T TEST: Unequal Variances — Alpha 0.05

	std err	*t-stat*	*df*	*p-value*	*t-crit*	*lower*	*upper*	*sig*	*effect r*
One Tail	61.0161817	12.3336076	5.82700381	1.07269E-05	1.95356107			yes	0.98138033
Two Tail	61.0161817	12.3336076	5.82700381	2.14539E-05	2.4646297	602.167352	902.931939	yes	0.98138033



The average epiphyseal subchondral growth plate surface area increased from 120-days-old (619.60 ± 47.55 mm) to 900-days-old (1372.15 ± 143.67 mm²).
This difference (752.55 mm²), 95% CI [602.17, 902.93] was statistically significant t (5.82) = 12.33, P < .001, with a large effect size (d = 7.56).