The Effects of Therapy on the Gait of Children with Down Syndrome: A Systematic Review

By Lucia Botez, Steph Graetz, Colleen McDonald and Maria Notopoulos
Outline

- Background
- Methods
- Results
- Article reviews
- Conclusions
- Limitations

www.foietlumiere.org/site/english/001.html
• Down syndrome (DS) is common\(^1\)
  – 1/700 births

• Due to trisomy of chromosome 21
  – 15 and 22 less common\(^1\)

• Common characteristics\(^1,2\):
  – muscle hypotonia and weakness
  – ligamentous laxity
  – gross motor delay
Background

- Walking achieved ~1 year later than typically developing children\(^3,4,5\)

- Ambulation has psychosocial consequences\(^6,7\)

- Parents of children with DS identify walking as most valued milestone\(^8\)
Courtesy of Naznin-Virji Babul and the Down Syndrome Research Foundation
Background

• Common therapy received
  – PT: strength, motor control, function
  – OT: visual motor and manipulative skills, community participation
  – SLP: oral motor skills, speech

• Therapy usually starts in infancy
Can physical therapy effect the gait of these children?
What’s in the literature?

• Scarce overall

• Many reviews on early intervention and DS
  – Gibson and Harris 1988\textsuperscript{10}
  – Nilholm 1996\textsuperscript{11}

• Review on motor development and DS
  – Lautteslager 2006 (Dutch)
Why do this review?

• No systematic review on gait and DS
• Literature in this area is unfocused
• Evidence-based practice
• Gait most important gross motor skill
Objective

“To systematically review and rate the levels of evidence and methodological quality of studies that examined the effects of various therapeutic interventions on the gait of children with DS”
METHODOLOGY

Gabriel House of Mexico
Search Strategy

1. General search in:

- CINAHL
- EMBASE
- ERIC
- MEDLINE
- PsychINFO

- PubMed
- SPORTDiscus
- Cochrane
- CENTRAL

→ Autoalerts: OVID, EBSCO
46. speed.mp.
47. distance.mp.
48. balance.mp.
49. coordination.mp.
50. gross motor.mp.
51. transfers.mp.
52. stand$.mp.
53. sit$.mp.
54. supine.mp.
55. prone.mp.
56. outcome.mp.
57. rate.mp.
58. physical activit$.mp.
59. rehabil$.mp.
60. strength$.mp.
61. flexib$.mp.
62. manual therapy.mp.
63. electrotherapy.mp.
64. recreation therapy.mp.
65. occupational therapy.mp.
66. active therap$.mp.
67. neurodevelopmental therapy.mp.
68. stair climbing.mp.
69. sport$.mp.
70. mobili$.mp.
71. play$.mp.
72. athelet$.mp.
73. taping.mp.
74. splint$.mp.
75. brac$.mp.
76. orthotic$.mp.
77. social$.mp.
78. measure$.mp.
79. velocity.mp.
80. assessment.mp.
81. roll$.mp.
82. posture.mp.
83. anti-gravity movement.mp.
84. independ$.mp.
85. grasp$.mp.
86. reach$.mp.
87. step$.mp.
88. jump$.mp.
89. agility.mp.
Selection Protocol - Stage 1

- 2 reviewers independently screened TITLES
- If 2 of below criteria, or ambiguous, article was screened further

<table>
<thead>
<tr>
<th>Screening Criteria</th>
<th>Yes?</th>
<th>No?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title identifies Down syndrome population:</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Title identifies intervention of physical therapy(^{12}) (or related interventions):</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Title identifies outcome or effect on gross motor development:</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Title is ambiguous and may have content related to the above:</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Selection Protocol - Stage 2

• 2 reviewers independently screened ABSTRACTS

• If all of below criteria, or ambiguous, article was screened further

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Yes?</th>
<th>No?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population of Down syndrome</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Population of children (0-17yrs)</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Physical therapy related intervention</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Outcome of gross motor function</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>
Selection Protocol - Stage 3

- FULL TEXT articles divided among reviewers
- Each reviewer extracted population, intervention and outcome data
- A “PICO chart” was created
<table>
<thead>
<tr>
<th>Ref ID</th>
<th>Population</th>
<th>Intervention</th>
<th>Outcomes</th>
<th>Special Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 (1)</td>
<td>Not able to retrieve full text article</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>346 (2)*</td>
<td>14 children w/DS; Age Range: 3-8 years old; independent Ambulation for 30 yards</td>
<td>Flexible SMO’s; 3 testing sessions over 10 weeks</td>
<td>Standing, Walking, Running and Jumping Dimensions of GMFM; ROM</td>
<td>SMO’s shown to have +ve influence on postural stability and less complex skills</td>
</tr>
<tr>
<td>412 (3)</td>
<td>10 ds (5 experienced sitters 5 non-experienced)</td>
<td>Moving room oscillated .2 and .5 Hz. Sitting position. 7 days.</td>
<td>OPTOTRAK VEP acuity test</td>
<td>Full text not in English</td>
</tr>
<tr>
<td>585 (4)</td>
<td>10 DS infants (gr. 1 12.2 mo and gr. 2 17 mo)</td>
<td>Visual cues, oscillatory room</td>
<td>Trunk sway</td>
<td>There is a coupling that can be improved with practice</td>
</tr>
</tbody>
</table>
Selection Protocol - Stage 3

• Common trends emerged
  – Early intervention
  – Vestibular training
  – Gait (reciprocal bipedal locomotion)
Final Inclusion Criteria

• Studies
  – Peer-reviewed journal, English

• Population
  – Clinical diagnosis of DS
  – 0 - 17 years of age

• Intervention
  – Any physical therapy related intervention

• Outcome
  – A variable of gait

Excluded:
- books, abstracts from conferences
- intervention for parents
Search Strategy

2. Gait specific search:
   a. Down syndrome
   b. gait OR locomotion OR walking OR walk
   c. a AND b

3. Hand-search:
   • Pediatric Physical Therapy
   • Gait and Posture
   • Ambulatory Pediatrics
   • Journal of Pediatric Healthcare
   • Pediatric Rehabilitation
   • Pediatric Gait: A New Millenium in Clinical Care and Motion Analysis Technology
4. Forward citation searches on authors

5. Screened reference lists of included articles and background articles

6. Key authors and clinical experts contacted via e-mail
Search Strategy

• Articles saved in RefWorks
  – duplicates removed

• Ceased all search methods in June 2007
Methodological Quality

- 2 reviewers independently scored articles using PEDro
- Well known in PT community and valid
PEDro Scale (last modified March, 1999):

1. eligibility criteria were specified.
2. subjects were randomly allocated to groups
3. allocation was concealed.
4. the groups were similar at baseline
5. there was blinding of all subjects.
6. there was blinding of all therapists
7. there was blinding of all outcome assessors.
8. measures of at least one key outcome were obtained from more than 85% of the subjects initially allocated to groups.
9. all subjects for whom outcome measures were available received the treatment or control condition as allocated or, where this was not the case, data for at least one key outcome was analysed by "intention to treat".
10. the results of between-group statistical comparisons are reported for at least one key outcome.
11. the study provides both point measures and measures of variability for at least one key outcome.
# Levels of Evidence

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>Meta-analysis or systematic review of randomized clinical trials</td>
</tr>
<tr>
<td>1b</td>
<td>Randomized control trial with narrow confidence interval</td>
</tr>
<tr>
<td>2a</td>
<td>Systematic review cohort studies</td>
</tr>
<tr>
<td>2b</td>
<td>Single randomized clinical trial</td>
</tr>
<tr>
<td>3a</td>
<td>Systematic review of case-control studies</td>
</tr>
<tr>
<td>3b</td>
<td>Individual case-control study</td>
</tr>
<tr>
<td>4</td>
<td>Case series, poor cohort case controlled, including pre-post test</td>
</tr>
<tr>
<td>5</td>
<td>Descriptive studies</td>
</tr>
<tr>
<td>6</td>
<td>Expert opinion and anecdotal evidence</td>
</tr>
</tbody>
</table>
Data Extraction

• Data extraction form made for review

• 2 reviewers independently extracted data onto form

Disagreement between reviewers at any of the above stages was resolved by 3rd party arbitration
Data Analysis

• Data extracted into summary tables
  – Study characteristics
  – Outcomes and results

• Calculated Kappa
  – Stage 1, 2, 3
  – PEDro
  – Levels of Evidence
RESULTS
Search

Total studies retrieved from search method #1 \( N = 5197 \)

Excluded by screening titles \( N = 4817 \)

Abstracts retrieved for further screening \( N = 380 \)

Excluded by screening abstracts \( N = 316 \)

Studies retrieved for full text analysis \( N = 64 \)

Excluded by evaluating full text \( N = 54 \)

Studies retrieved for PEDro and data extraction \( N = 10 \)

Total studies retrieved from search method #2-6 \( N = 0 \)

Final number of included articles \( N = 10 \)
Articles

• 3 articles on orthoses and 7 on other interventions

• Total of 181 children with DS were studied

• 8 of 10 studies showed significant or positive results
# Methodological Quality

<table>
<thead>
<tr>
<th>Year of Publication/First Author</th>
<th>Article Title</th>
<th>PEDro Score (/10)</th>
<th>Kappa Score (/1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004 Martin</td>
<td>Effects of supramalleolar orthoses on postural stability in children with Down syndrome</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>2001 Selby-Silverstein</td>
<td>The effect of foot orthoses on standing foot posture and gait of young children with Down syndrome</td>
<td>5</td>
<td>0.8</td>
</tr>
<tr>
<td>2005 Pitetti</td>
<td>Dynamic foot orthosis and motor skills of delayed children</td>
<td>5</td>
<td>0.8</td>
</tr>
<tr>
<td>2005 Lafferty</td>
<td>A Stair Walking Intervention Strategy for Children with Down’s Syndrome</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>2001 Ulrich</td>
<td>Treadmill training of infants with Down syndrome: evidence-based developmental outcomes</td>
<td>6</td>
<td>1</td>
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</tbody>
</table>
## Methodological Quality

<table>
<thead>
<tr>
<th>Year of Publication/First Author</th>
<th>Article Title</th>
<th>PEDro Score (/10)</th>
<th>Kappa Score (/1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002 Winchester</td>
<td>The effect of therapeutic horseback riding on gross motor function and gait speed in children who are developmentally delayed</td>
<td>5</td>
<td>0.8</td>
</tr>
<tr>
<td>2003 Uyanik</td>
<td>Comparison of Different Therapy approaches in Children with Down Syndrome</td>
<td>5</td>
<td>0.8</td>
</tr>
<tr>
<td>1996 Sayers</td>
<td>Qualitative Analysis of a Pediatric Strength Intervention on the Developmental Stepping Movements of Infants with Down Syndrome</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>1984 Esenther</td>
<td>Developmental coaching of the Down syndrome infant</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>2002 Wang</td>
<td>Promoting balance and jumping skills in children with down syndrome</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Year / First Author</td>
<td>Group Design</td>
<td>Evidence Level</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------------------</td>
<td>----------------</td>
<td></td>
</tr>
<tr>
<td>2004 Martin</td>
<td>Repeated measures</td>
<td>Level 4</td>
<td></td>
</tr>
<tr>
<td>2001 Selby-Silverstein</td>
<td>Repeated measures</td>
<td>Level 4</td>
<td></td>
</tr>
<tr>
<td>2005 Pitetti</td>
<td>Pre – post</td>
<td>Level 4</td>
<td></td>
</tr>
<tr>
<td>2005 Lafferty</td>
<td>Pre - post</td>
<td>Level 4</td>
<td></td>
</tr>
<tr>
<td>2001 Ulrich</td>
<td>Randomized control trial</td>
<td>Level 2b</td>
<td></td>
</tr>
<tr>
<td>Year / First Author</td>
<td>Group Design</td>
<td>Evidence Level</td>
<td></td>
</tr>
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<td>---------------------</td>
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<td></td>
</tr>
<tr>
<td>2002 Winchester</td>
<td>Repeated measures</td>
<td>Level 4</td>
<td></td>
</tr>
<tr>
<td>2003 Uyanik</td>
<td>3 way comparison pre-post</td>
<td>Level 4</td>
<td></td>
</tr>
<tr>
<td>1996 Sayers</td>
<td>Exploratory multiple case study</td>
<td>Level 5</td>
<td></td>
</tr>
<tr>
<td>1984 Esenther</td>
<td>Retrospective study</td>
<td>Level 4</td>
<td></td>
</tr>
<tr>
<td>2002 Wang</td>
<td>Pre-post study</td>
<td>Level 4</td>
<td></td>
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</table>

K = 1
Orthoses
## Orthoses

<table>
<thead>
<tr>
<th>Year/ First Author</th>
<th>Group Design/ Evidence Level/ PEDro</th>
<th>Intervention</th>
<th>Control Intervention</th>
<th>Population/ N</th>
<th>Ages</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004 Martin¹⁴</td>
<td>Repeated Measures Level 4 PEDro 4</td>
<td>Children wore flexible SMO’s 8hrs/day; 6 weeks</td>
<td>Shoes only</td>
<td>DS N= 14</td>
<td>3yr6 mo – 8 yrs</td>
</tr>
<tr>
<td>2001 Selby-Silverstein¹⁵</td>
<td>Repeated Measures Level 4 PEDro 5</td>
<td>Children wore FO’s 5hrs/day; 4 consecutive days</td>
<td>DS: Shoes only  Non-DS: No FO’s</td>
<td>DS (n=16) Non-DS (n=10) N=26</td>
<td>36 – 84 mo</td>
</tr>
<tr>
<td>2005 Pitetti¹⁶</td>
<td>Pre – post Level 4 PEDro 5</td>
<td>Children wore Pattibob DFO’s Frequency unclear; 2 mo and 1 week</td>
<td>No DAFO’s</td>
<td>CP (n=3) DS (n=2) DD (n=20) N=17</td>
<td>46.6 ±10.6 mo</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DS: 28.0± 1.4 mo</td>
</tr>
<tr>
<td>Year/First Author</td>
<td>Outcome</td>
<td>Measure</td>
<td>Results</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>---------</td>
<td>--------------------------------------------------------</td>
<td>--------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004 Martin$^{14}$</td>
<td>Gait</td>
<td>GMFM Dimension E: Walking, Running, Jumping Dimension</td>
<td>Significant $p = 0.0001$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001 Selby-Silverstein$^{15}$</td>
<td>Gait speed</td>
<td>Tachometer</td>
<td>Non-significant $p = 0.09$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005 Pitetti$^{16}$</td>
<td>Gait</td>
<td>PDMS-2 Locomotion Section</td>
<td>Non-significant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Orthoses

- Only intervention where multiple studies were conducted
- Intervention and population varied
- Outcome measures varied
- Small sample sizes
- Only one control group
Orthoses

Clinical recommendation:
Clinicians should evaluate orthoses suitability and effectiveness on a case by case basis
Active Therapy / Stair Walking

**Lafferty 2005**
Pre – post, Level 4, PEDro 5

**Intervention and Population**
Children participated in a hierarchical active therapy program progressed on ability
3hrs biweekly; 12 weeks

No Control
DS
N=7
Age= ± 3.4 yrs

**Outcome, Measures and Results**
Kinematic joint angle data for ascent and decent phases
Significant in R. ankle, L. hip and trunk

Observational analysis
Qualitative and quantitative showed improvements in stair walking
Active Therapy / Stair Walking

• Whole and part task stair walking practice → improvements
• Exercises could easily be used in therapy
• Study design and methodology assessed as:
  – Sackett Levels of Evidence: 4
  – PEDro score: 5
• Most significant critique
  – Small sample size of only 7

Clinical recommendation: whole and part task stair walking may be useful to facilitate stair walking in children with DS
Treadmill Training

www.kines.umich.edu
Treadmill Training

Ulrich et al. 2001
Randomized control trial, Level 2b, PEDro 6

**Intervention and Population**

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Control: traditional PT, 2x/week, until independently walking</th>
<th>DS, N=30</th>
<th>Ages:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stepping on a treadmill + traditional PT</td>
<td></td>
<td></td>
<td>Control (312.1 days±)</td>
</tr>
<tr>
<td>From 1 – 8 mins, 5 days/week, until independently walking</td>
<td></td>
<td></td>
<td>Experiment (302.6 days±)</td>
</tr>
</tbody>
</table>

**Outcome, Measures and Results**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Experiment: 300 days ±</th>
<th>Control: 401 days ±</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent walking: # of days from onset of study until independent walking</td>
<td>Significant p=0.02</td>
<td></td>
</tr>
</tbody>
</table>
Clinical recommendation: treadmill training should be considered as a treatment option for infants with DS
Horseback Riding
Horseback Riding

Winchester et al. 2002

Repeated Measures, Level 4, PEDro 5

Intervention and Population

Horseback riding focusing on stretching, strength, postural Control

No Control DS (n=2); Ages CP (n=2); 57.8-

DS and autism (n=1); 86.5 mo SB (n=1);

TBI (n=1)

1 hr, once/wk, 7 wks

Outcomes, Measures and Results

Gait GMFM Dimension E Significant at 1 wk and 7 wks post

Gait speed Time to walk 10 m Non-significant
Horseback Riding

- Previously shown to improve strength and balance in developmentally delayed children\textsuperscript{19,20}
- Sustained improvements at 7 week follow-up
- Study design quality and methodology assessed as:
  - Sackett Levels of Evidence: 4
  - PEDro score: 5
- Most significant critique
  - Small sample size of 7, only 3 had DS

Clinical recommendation: therapeutic horseback riding may be considered for use when treating the gait of children with DS in combination with other therapies
Sensory Integration Therapy, Vestibular Therapy, or Neurodevelopmental Therapy
SIT, Vestibular, NDT

Uyanik et al. 2003
3 way comparison pre-post, Level 4, PEDro 5

**Intervention and Population**

Group 1: SIT  No Control  DS: N=45  Ages:
Group 2: SIT+Vest  SIT (n=15)  SIT: 9.6±
Group 3: NDT  SIT+Vest (n=15)  SIT+ Vest: 8.67±
NDT (n=15)  NDT: 8.53±

1.5 hrs/day, tri-weekly, 3 months

**Outcome, Measures and Results**

Time of 10 steps forward walking  SIT and SIT+vest: non-significant
NDT: significant

Time of 10 step sideways walking  SIT and SIT+vest: non-significant
NDT: significant
SIT, Vestibular, NDT

• Study design quality and methodology assessed as:
  – Sackett Levels of Evidence: 4
  – PEDro score: 5

• One of the largest sample sizes of articles analyzed

• Most significant critique
  – No control group

Clinical recommendation: Since NDT was found to be effective at improving walking skills of children with DS it may be considered a treatment option
Strength Intervention
Strength Intervention

Sayers et al. 1996
Exploratory multiple case study, Level 5, PEDro 3

Intervention and Population
Individualized strength intervention using ankle weights
1/wk teacher, 3-5/wk with parent; 8 wks
No Control
DS: N= 5
Ages: 22-38 mo

Outcome, Measures and Results
HELP strands (Walk/ Run) Improved
PMISM (n=3) Improved
BDI (Locomotion) No change (n=2), improved (n=2)
Height of step (n=3) Improved (n=1), improve L. foot (n=1), decline (n=1)
Stride Length (n=3) Improved (n=1), improve R. foot (n=1), decline R. foot (n=1)
Strength Intervention

- Study design quality and methodology assessed as:
  - Sackett Levels of Evidence: 5
  - PEDro score: 3

- Results are difficult to interpret
  - Qualitative study design
  - Lack statistical analyses
  - Small sample size: 1 withdrawal, 1 child incomplete data

- Acknowledging each child’s health needs and individualization of therapy is commended

Clinical recommendations: we are unable to draw any clinical conclusions from this research
Developmental Coaching

http://community.nursingspectrum.com/MagazineArticles/article.cfm?AID=12259
Developmental Coaching

Esenther 1984
Retrospective Study, Level 3, PEDro 1

Intervention and Population
Developmental coaching with 3 hand skills, 3 mobility skills targeted
Duration and frequency of intervention not specified
Control: Normative values from literature of typical children
DS N=40 Ages not reported

Outcomes, Measures and Results
Independent walking: Bonaparte Infant Parent Service (BIPS) free walking category
40% achieved free walking by 18 months of age
Developmental Coaching

- Of the reviewed studies it is the lowest quality
  - Sackett Levels of Evidence: 4
  - PEDro score: 1

- Most significant critique
  - Retrospective study design without true experimental manipulation
  - No integrated control group

- Uncertainty of intervention

Clinical recommendations: we are unable to draw any clinical conclusions from this research
Jump Training
Jump Training

Wang et al. 2002
Pre-Post, Level 4, PEDro 5

Intervention and Population

Horizontal and vertical jump practice
Control: Typically developing children
30 min practice sessions
3 x/week, 6 weeks
DS, Ages:
N=20, 3-6 years

Outcomes, Measures and Results

Gait: # of steps walking on a forward line and balance beam
Significantly greater pre-post scores compared to typically developing children
Jump Training

• Study design quality and methodology assessed as:
  – Sackett Levels of Evidence: 4
  – PEDro score: 5

• Improvements of only 1-2 additional steps is statistically significant but is it functionally significant?

Clinical recommendations: balance and jumping had positive (although small) effects, thus, it could be considered as part of a program to improve the gait of children with DS
Conclusions

• Current research is a heterogeneous mix of interventions and outcomes

• Low quality designs overall

• We recommend combinations of different therapies that accommodate child’s specific needs and preferences

• We strongly encourage all pediatric therapists to continuously re-evaluate each child’s progress in order to ensure best evidence practice
Future Research

• More research must be done

• Higher quality research

• Optimal treatment parameters

• Emerging research\textsuperscript{25-30}

www.goldcoastdownsyndrome.org
Limitations

• Some studies could not be evaluated because full text not in English

• Authors lack of expertise in the field of publishing literature

• Limited experience in working with children with DS
Acknowledgements

Thank you to clinicians and researchers Anne Chin, Bonnie Forrester, Julia Looper, Kenneth Pitetti, Charmayne Ross and Dale Ulrich

Special thank you to:
Susan Harris
Naznin Virji-Babul
Charlotte Beck
Angela Busch

For their support and contributions ☺️
References

References

References

Future Research


References

**Photographs**
1. Gabriel House of Mexico
3. [www.cbdsa.com/images/Warrick_xmas06_008.jpg](http://www.cbdsa.com/images/Warrick_xmas06_008.jpg)
4. [http://farm1.static.flickr.com/58/221312636_293942d007.jpg](http://farm1.static.flickr.com/58/221312636_293942d007.jpg)
5. [www.childrensaustin.org/ama/icache/w300h400/orig/Lily.jpg](http://www.childrensaustin.org/ama/icache/w300h400/orig/Lily.jpg)
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**Video**
Questions???