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## Addendum A: School computer laboratory workstation assessment

### COMPUTER LABORATORY WORKSTATION ASSESSMENT

School Name:

Date:

Number of Labs:

Lab Nr:

Assessed by:

Study Nr:

<b>WORKING ENVIRONMENT</b>	<b>Yes</b>	<b>No</b>
1. Classroom is climate controlled by means of an air conditioner.		
2. Draughts at the level of head and knees.		
3. Noise level interferes with concentration.		

<b>SPATIAL ENVIRONMENT</b>	<b>Yes</b>	<b>No</b>
1. Number of learners in computer laboratory during one lesson/ class, not exceeding 30.		
2. Aisle width between desks or workstations is in the range of 152cm- 183 cm.		
3. Adequate space exists for easy movement among workstations, book cases, shelves and doorways/ exits.		
4. Book cases and shelves are of sufficient size to display and/ or store necessary learning materials.		

**WORKSPACE ENVIRONMENT**

<b>Chair</b>	<b>Yes</b>	<b>No</b>
1. Chair has movable rolling casters		
2. Surface of seat to floor in range of 380-510mm		
3. Seat pan depth in the range of 330-430mm		
4. Back support's height is adjustable		
5. Back support's angle is adjustable		
6. Arm supports present		
7. Arm support's height is adjustable		

<b>Desk</b>	<b>Yes</b>	<b>No</b>
1. Desk height is adjustable		
2. Desk width from left to right edge is 1500mm minimum		
3. Desk depth from front to back edge is 900mm minimum		
4. Width of legs space under desk when in seated position 800mm minimum		
5. Depth of space for legs when seated 550mm minimum		
6. Height of space between legs and desk when seated 580mm minimum		
7. Footrest provided		
8. Footrest area: 300x 375mm		
9. Footrest angle is adjustable		

<b>Computer Screen</b>	<b>Yes</b>	<b>No</b>
1. Screen depth (front of screen to table edge): 500-750mm		
2. Screen height measured from floor to centre of screen: 900-1150mm		
3. Screen dimension: _____ mm/mm		
4. Inclination of viewing monitor is adjustable : 88°-105° from the horizontal		
5. Usable manuscript holder attached to screen		

<b>Keyboard</b>	<b>Yes</b>	<b>No</b>
1. Keyboard positioned on separate tray		
2. Height from floor to home row of keyboard is in the range of 700-850mm		
3. Height of home row of keyboard to desk level in the range of 100-260mm		
4. Keyboard angle is adjustable		
5. Gel wrist support in use		

<b>Input Device</b>	<b>Yes</b>	<b>No</b>
1. Mouse used as in-put device		
2. Mouse has an adjustable position		
3. Mouse can be used ambidextrously		
4. Mouse pad available and used		

<b>VISUAL ENVIRONMENT</b>	<b>Yes</b>	<b>No</b>
1. Screen image is stable		
2. Monitor has adjustable brightness and contrast controls		
3. Control of glare through the use of screens, indirect lighting sources or equipment positioning		
4. Good quality light with natural or indirect lighting sources		

**Addendum B: Data extraction template**

<b>Data Extraction Template</b>	
<b>Author(s)</b>	
<b>Year published</b>	
<b>Title of paper</b>	
<b>Journal title</b>	
<b>Year published</b>	
<b>Country of origin</b>	
<b>Study design</b>	
<b>Research Question</b>	
<b>Research Aim(s)</b>	
<b>Population</b>	
<b>Sample size</b>	
<b>Gender of sample</b>	
<b>Age of sample</b>	
<b>Study Outcomes</b>	
<b>Full reference</b>	

## **Addendum C: Letter of invitation**

To Whom It May Concern

**Re: Research project in conjunction with the Physiotherapy Department of the University of Stellenbosch**

With this letter I would like to invite your school to participate in a research project that forms part of a doctoral degree thesis in physiotherapy. This project aims at finding the most appropriate chair to use in a computer laboratory. A recent study done in South Africa showed that 73% of high school learners suffer from pain when they use a desktop computer. In another study, it has been reported that musculoskeletal symptoms are one of the top ten health problems among schoolchildren. Data on furniture size for South African adolescents and children are lacking.

We aim to measure the anthropometry (body dimensions) of high school learners aged 13-18 years old in order to match this with the current measurement of the computer chairs. The study will take place in three phases; learners from your school might be selected to take part in one or more of the phases of this project.

During Phase 1, each learner will be measured by one of four different research assistants. Each assistant will do three body measurements. During Phase 2 the learners' posture will be measured by the non-invasive Vicon motion analysis system at the Stellenbosch

University. First, the learners' posture will be measured in the chair that they normally use in school and then in the new proposed chair.

We will also measure the school's computer chairs and this will include: SH, SD and seat slope. Your school was one of 20 schools that were randomly selected from a pool of schools in the Cape Metropole Area.

In order to inform the school principal, educators and teachers, we will make arrangements with each school to present the aim, objectives, reasons and procedures of the project. Then we will invite learners to indicate whether they are willing to volunteer to be in the pool for random selection. In Phase 1, 36 learners, three boys and three girls from each age group (13-18 years) will be randomly selected. In Phase 2, 2 learners per age group (13-18 years) will be randomly selected. Your school will not necessarily be randomly selected to participate in Phase 1A and Phase 3, but will definitely take part in Phase 1B, if you consent to it doing so. Learners, who agree to participate in the study, will then receive a consent form, which must be completed by a parent or legal guardian.

A suitable time and date will be arranged with the school principal. Testing will take place between January and November 2010.

Please contact me should you require any further information with regards to this project. I will contact you in due course to enquire as to your participation.

Thank you and kind regards,

Sjan-Mari van Niekerk (M.Sc. Physiotherapy)

Principal Researcher  
071 6739748  
smvanniekerk@sun.ac.za

## **Addendum D: Consent form (minors)**

### **PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM FOR USE BY PARENTS / LEGAL GUARDIANS**

#### **TITLE OF THE RESEARCH PROJECT:**

Ergonomic chair design for school computer laboratories in the Cape Metropole area, Western Cape, South Africa

#### **REFERENCE NUMBER:**

**PRINCIPAL INVESTIGATOR:** Sjan-Mari van Niekerk (M.Sc. Physiotherapy)

**ADDRESS:** Division Physiotherapy, Department Interdisciplinary Health Sciences, Faculty of Medicine and Health Sciences, University of Stellenbosch, Tygerberg campus

**CONTACT NUMBER:** 071 6739748

Your child is being invited to take part in a research project. Please take some time to read the information presented here, which will explain the details of this project. Please ask the study staff any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research entails and how your child could be involved. Also, your child's participation is **entirely voluntary** and you are free to decline to participate. If you say no, this will not affect you or your child negatively in any way whatsoever. You are also free to withdraw him/her from the study at any point, even if you do initially agree to let him/her take part.

This study has been approved by the **Committee for Human Research at Stellenbosch University** and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, South African Guidelines for Good Clinical Practice and the Medical Research Council (MRC) Ethical Guidelines for Research.



### **What is this research study all about?**

The aim of this research project is to match the body measurements of high school students aged 13 to 18 years in the Cape Metropole area with the dimension of the school computer chair. In one of our previous studies, it was found that 73% of high school students in the Cape Metropole experience pain while using a desktop computer. In a different study, it has been reported that musculoskeletal symptoms are one of the top ten health problems among high school students. With this study, we hope to be able to recommend the most appropriate chair for our students in Cape high schools.

Your child might be randomly selected to take part in either one or both phases of this project. In phase 1, each child's body dimensions will be measured by one of four different research assistants. The measurements will be made with a non-invasive measuring tape and all measurements will be done at the school. Four research assistants will measure four students simultaneously. In Phase 2, an appropriate computer chair will be selected, and the students will be tested at the Motion Analysis Laboratory at the Stellenbosch University. The students' posture will be analysed while they sit in a school chair, and then in the proposed chair. The analysis will be done by placing non-invasive markers on the students, which will be visible to the Vicon Motion Analysis System. The students will remain clothed during all testing procedures.

During Phase 1, students will only miss one hour of school and, during Phase 3, students will miss roughly 4 hours of schooling. The most appropriate times for testing will be agreed upon by the main researcher and the school principal.

### **Why has your child been invited to participate?**

The school that your child attends was randomly selected from all schools that form part of the Cape Metropole. The 13- to 18-year-old students from the school have been invited to participate in the study.

**What will your responsibilities be?**

Your responsibility is only to provide consent should you agree for your child to participate in the study.

**Will your child benefit from taking part in this research?**

Your child's participation will help the research team to develop educational guidelines on sitting posture and promotion of good spinal health. Your child and future students may benefit, since these guidelines may reduce the incidence of spinal and shoulder pain experienced by children using computers and thus prevent youth from developing long-term joint and muscle problems.

**Are there any risks involved in your child taking part in this research?**

There are no risks involved in participating in this research project.

**Who will have access to your child's records?**

All the information collected with this project will be treated as confidential and will be protected. If this information is used in a thesis or publication, the identity of your child will remain anonymous. Only the researcher and her team will have access to the information. The records will be kept in safe storage in the Physiotherapy Department, Stellenbosch University.

**What will happen in the unlikely event of your child getting injured in any way, as a direct result of taking part in this research study?**

The testing will take part in the Motion Analysis Laboratory at Stellenbosch University. The school or Stellenbosch University will provide transport, and third-party insurance will cover your child if the vehicle should be involved in an accident.

**Will you or your child be paid to take part in this study and are there any costs involved?**

You or your child will not be paid to take part in the study. There will be no costs involved for you if your child does take part.

**Is there anything else that you should know or do?**

- You can contact Sjan-Mari van Niekerk at tel. 071 673 974 if you have any further queries or encounter any problems.
- You can contact the Committee for Human Research at 021-938 9207 if you have any concerns or complaints that have not been adequately addressed by your child's study doctor.
- You will receive a copy of this information and consent form for your own records.

**Assent of Minor**

I (*Name of Child/Minor*)..... have been invited to take part in the above research project.

- The study leader and my parents have explained the details of the study to me, and I understand what they have said to me.
- I also know that I am free to withdraw from the study at any time if I am unhappy.
- By writing my name below, I voluntarily agree to take part in this research project. I confirm that I have not been forced either by my parents or doctor to take part.

.....

Name of child as independent witness

(To be written by the child if possible)

## Declaration by parent / legal guardian

By signing below, I (*name of Parent/Legal Guardian*) ..... agree to allow my child (*name of child*) ....., who is ..... years old, to take part in a research study entitled 'The anthropometric match between high school students and their computer workstations'.

### I declare that:

- I have read or had read to me this information and consent form and that it is written in a language with which I am fluent and comfortable.
- If my child is older than 7 years, he/she must agree to take part in the study and his/her ASSENT must be recorded on this form.
- I have had a chance to ask questions and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised to let my child take part.
- I may choose to withdraw my child from the study at any time and my child will not be penalised or prejudiced in any way.
- My child may be asked to leave the study before it has finished if the study doctor or researcher feels it is in my child's best interests, or if my child does not follow the study plan as agreed to.

Signed at (*place*) ..... on (*date*) ..... 2010.

Signature of parent / Legal guardian

Signature of witness

### Declaration by investigator

I (*name*) ..... declare that:

- I explained the information in this document to .....
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above.
- I did / did not use a translator (*if a translator is used, then the translator must sign the declaration below*).

Signed at (*place*) ..... on (*date*) ..... 2010.

**Signature of investigator**

**Signature of witness**

### Declaration by translator

I (*name*) ..... declare that:

I assisted the investigator (*name*) ..... to explain the information in this document to (*name of parent/legal guardian*) ..... using the language medium of Afrikaans/Xhosa.

We encouraged him/her to ask questions and took adequate time to answer them.

I conveyed a factually correct version of what was related to me.

I am satisfied that the parent / legal guardian fully understands the content of

this informed consent document, and has had all his/her questions satisfactorily answered.

Signed at (*place*) ..... on (*date*) ..... 2010.

Signature of translator

Signature of witness

**DEELNEMERINLIGTINGSBLAD EN -TOESTEMMINGSVORM VIR GEBRUIK DEUR  
OUERS/WETTIGE VOOGDE**

**TITEL VAN DIE NAVORSINGSPROJEK:**

**Die ontwikkeling van 'n ergonomies korrekte stoel vir rekenaar laboratoriums in die Kaapse Metropool, Wes-Kaap, Suid Afrika.**

**VERWYSINGSNOMMER:**

**HOOFNAVORSER:** Sjan-Mari van Niekerk (M.Sc. Fisioterapie)

**ADRES:** Afdeling Fisioterapie, Departement Interdisiplinêre Gesondheidswetenskappe, Fakulteit Mediese en Gesondheidswetenskappe, Stellenbosch Universiteit, Tygerberg Kampus.

**KONTAKNOMMER:** 071 673 9748

U kind (*of pleegkind, indien van toepassing*) word genooi om deel te neem aan 'n navorsingsprojek. Lees asseblief hierdie inligtingsblad op u tyd deur aangesien die besonderhede van die projek daarin verduidelik word. Indien daar enige deel van die projek is wat u nie ten volle verstaan nie, is u welkom om die navorsingspersoneel of dokter daaroor uit te vra. Dit is baie belangrik dat u ten volle moet verstaan wat die navorsing behels en hoe u kind daarby betrokke kan wees. U kind se deelname is ook **volkome**

**vrywillig** en dit staan u vry om deelname te weier. U kind sal op geen wyse hoegenaamd negatief beïnvloed word indien u sou weier om hom/haar te laat deelneem nie. U mag u kind ook te enige tyd aan die studie onttrek, selfs al het u ingestem om hom/haar te laat deelneem.

**Hierdie studie is deur die** Komitee vir Mensnavorsing van die Universiteit Stellenbosch **goedgekeur en sal uitgevoer word volgens die etiese riglyne en beginsels van die Internasionale Verklaring van Helsinki en die Etiese Riglyne vir Navorsing van die Mediese Navorsingsraad (MNR).**

### **Wat behels hierdie navorsingsprojek?**

Die doel van die studie is om die liggaamsmates van hoërskool leerlinge tussen die ouderdomme van 13 en 18 jaar, in die Kaapse Metropool area, met die afmetings van die skool se rekenaar stoele te vergelyk. In een van ons vorige studies is daar gevind dat 73% van hoërskool leerlinge pyn ervaar tydens die gebruik van 'n rekenaar. In 'n ander studie is daar gevind dat muskuloskeletale pyn een van die top tien gesondheidsprobleme van skoolleerlinge is. Die mees geskikte stoel moet vasgestel word.

U kind mag dalk lukraak gekies word om deel te neem aan een of meer van die drie fases van die projek. In Fase 1 word elke leerling een maal gemeet deur een van vier verskillende navorsingsassistentente. Die afmetings sal met 'n nie-indringende maatband geneem word en alle afmetings sal by die skool geneem word. Vier leerlinge sal gelyktydig gemeet word deur vier navorsingsassistentente. Gedurende Fase 2 word die mees toepslike stoel gekies vir hoërskool leerlinge; geen leerlinge word benodig tydens hierdie deel van die fase nie. Daarna sal leerlinge by Stellenbosch Universiteit se Bewegingsanaliese Labratorium getoets word. Die leerlinge se sit-postuur sal geanaliseer word terwyl hulle eers in 'n stoel sit wat gewoonlik by die skool gebruik word en dan in die voorgeskrewe stoel sit. Die analiese word gedoen deur merkers op die leerlinge te plaas wat dan deur die VICON bewegingsanaliese sisteem geanaliseer word. Die leerlinge sal ten alle tye geklee bly. Gedurende Fase 1 sal die



lukraak gekose leerlinge slegs 1 uur van skool mis en gedurende Fase 3 om en by vier ure. Die mees gepaste tye vir die afmetings sal met die skoolhoof onderhandel word.

**Waarom is u kind genooi om deel te neem?**

Die skool waaraan u kind behoort is lukraak gekies uit al die skole in die Kaapse Metropool. Die 13 tot 18 jarige leerders van die skool is genooi om deel te neem aan die projek.

**Wat sal u verantwoordelikhede wees?**

U is slegs verantwoordelik om toestemming te gee vir u kind se deelname aan die projek indien u sou instem.

**Sal u kind voordeel trek deur deel te neem aan hierdie navorsing?**

U kind se deelname help die navorsingspan om opvoedkundige riglyne op te stel vir die korrekte sittende postuur en die bevordering van goeie rug gesondheid. U kind en toekomstige leerders kan voordeel trek aangesien hierdie riglyne die voorkoms van rug en skouer pyn deur kinders wat rekenaars gebruik ervaar word, kan help voorkom. Dit sal ook help met die voorkoming van langtermyn gewrig- en spierprobleme.

**Is daar enige risiko's verbonde aan u kind se deelname aan hierdie navorsing?**

Daar is geen gevare verbonde aan die deelname aan hierdie navorsingsprojek nie.

**Wie sal toegang hê tot u kind se mediese rekords?**

Alle inligting wat ingesamel word in hierdie projek word as konfidensieel beskou en sal sodanig beskerm word. Indien hierdie inligting in 'n tesis of ander publikasie gebruik word sal u kind se identiteit anoniem bly. Slegs die navorser en haar span sal toegang hê tot die inligting. Die rekords sal veilig gestoor word by die Fisioterapie Departement, Stellenbosch Universiteit.

**Wat sal gebeur in die onwaarskynlike geval van 'n besering wat mag voorkom as gevolg van my kind se deelname aan hierdie navorsingsprojek?**

Die toetsing vind plaas by die Departement van Fisioterapie by Stellenbosch Universiteit. Vervoer word verskaf deur die skool of die Universiteit Stellenbosch. Daar is derde party versekering wat u kind sal dek indien die voertuig in 'n ongeluk betrokke sou wees.

**Sal u of u kind betaal word vir deelname aan die projek en is daar enige koste verbonde aan deelname?**

Nee, nie u of u kind sal betaal word vir deelname aan die projek nie. Deelname aan die projek sal u niks kos nie.

**Is daar enigiets anders wat u moet weet of doen?**

- U kan Sjan-Mari van Niekerk kontak by tel 071 673 9748 indien u enige vêrdere vrae het of enige probleme ondervind.
- U kan die Komitee vir Mensnavorsing kontak by 021-938 9207 indien u enige bekommernis of klag het wat nie bevredigend deur u studiedokter hanteer is nie.
- U sal 'n afskrif van hierdie inligtings- en toestemmingsvorm ontvang vir u eie rekords.

**Instemming van minderjarige**

Ek (naam van kind/minderjarige) ..... is genooi om deel te neem aan bogenoemde navorsingsprojek.

- Die studiedokter/verpleegster en my ouers het die besonderhede van bogenoemde navorsingsprojek aan my verduidelik en ek verstaan wat hulle aan my gesê het.
- Ek weet ook dat ek te enige tyd aan die navorsingsprojek kan onttrek indien

ek ongelukkig is.

- Deur my naam hieronder in te vul, onderneem ek om vrywillig aan die navorsingsprojek deel te neem. Ek bevestig ook dat ek nie deur my ouers of studiedokter gedwing is om deel te neem nie.

.....

Naam van kind

(Deur kind geskryf te word indien moontlik)

.....

Onafhanklike getuie

## Verklaring deur ouer/wettige voog

Met die ondertekening van hierdie dokument onderneem ek, (*naam van ouer/wettige voog*)  
....., om my kind (*naam van kind*)  
....., wat ..... jaar oud is, te laat deelneem aan 'n  
navorsingsprojek getiteld '**Die ontwikkeling van 'n ergonomies korrekte stoel vir rekenaar  
laoratoriums in die Kaapse Metropool**

,

Ek verklaar dat:

- Ek hierdie inligtings- en toestemmingsvorm gelees of aan my laat voorlees het en dat dit in 'n taal geskryf is waarin ek vaardig en gemaklik mee is.
- My kind moet instem om aan die navorsingsprojek deel te neem as hy/sy ouer as 7 jaar is, en dat sy/haar **INSTEMMING** op hierdie vorm aangeteken sal word.
- Ek geleentheid gehad het om vrae te stel en dat al my vrae bevredigend beantwoord is.
- Ek verstaan dat deelname aan hierdie projek **vrywillig** is en dat daar geen druk op my geplaas is om my kind te laat deelneem nie.
- My kind te enige tyd aan die projek mag onttrek en dat hy/sy nie op enige wyse daardeur benadeel sal word nie.
- My kind gevra mag word om aan die projek te onttrek voordat dit afgehandel is indien die studiedokter of navorser van oordeel is dat dit in sy/haar beste belang is, of indien my kind nie die ooreengekome studieplan volg nie.

Geteken te (*plek*) ..... op (*datum*) ..... 2010.

.....

.....

Handtekening van ouer/wettige voog

Handtekening van getuie

### Verklaring deur navorser

Ek (naam ) ..... verklaar dat:

- 1 Ek die inligting in hierdie dokument verduidelik het aan .....
- 2 Ek hom/haar aangemoedig het om vrae te vra en voldoende tyd gebruik het om dit te beantwoord.
- 3 Ek tevrede is dat hy/sy al die aspekte van die navorsingsprojek soos hierbo bespreek, voldoende verstaan.
- 4 Ek 'n tolk gebruik het/nie 'n tolk gebruik het nie. (*Indien 'n tolk gebruik is, moet die tolk die onderstaande verklaring teken.*)

Geteken te (*plek*) ..... op (*datum*) ..... 2010.

.....

.....

Handtekening van navorser

Handtekening van getuie

### Verklaring deur tolk

Ek (*naam*) ..... verklaar dat:

- 1 Ek die navorser (*naam*) ..... bygestaan het om die inligting in hierdie dokument in Afrikaans/Xhosa aan (*naam van ouer/wettige*

voog) ..... te verduidelik.

- 2 Ons hom/haar aangemoedig het om vrae te vra en voldoende tyd gebruik het om dit te beantwoord.
- 3 Ek 'n feitelik korrekte weergawe oorgedra het van wat aan my vertel is.
- 4 Ek tevrede is dat die ouer/wettige voog die inhoud van hierdie dokument ten volle verstaan en dat al sy/haar vrae bevredigend beantwoord is.

Geteken te (*plek*) ..... op (*datum*) ..... 2010.

.....

Handtekening van tolk

.....

Handtekening van getuie

**INCWADANA ENGOLWAZI NGOMTHATHI-NXAXHEBA KUNYE NEFOMU YEMVUMELWANO EKUMELE ISETYENZISWE NGUMZALI/NGUMGCINI-MNTWANA OSEMTHETHWENI**

**ISIHLOKO SEPROJEKTHI YOPHANDO:**

**INOMBOLO YONXULUMANO:**

**UMPHANDI OYINTLOKO:**

**IDILESI:**

**INOMBOLO YOQHAGAMSHELWANO:**

Umntwana wakho (*okanye omgcinayo, ukuba ukhona*) uyamenywa ukuba athathe inxaxheba kwiprojekthi yophando. Nceda thatha ixesha lokufunda ulwazi oluvezwe apha, oluzakuthi luchaze iinkcukacha zale projekthi. Nceda buza nayiphina imibuzo emalunga nayiphina indawo ongayiqondiyo ngokupheleleyo kubasebenzi besi sifundo okanye kugqirha. Kubaluleke kakhulu ukuba waniliseke ngokupheleleyo yinto yokuba uacelwe kakuhle ukuba yintoni ebangwa sesi sifundo kwaye ungabandakanyeka njani. Kwakhona, ukuthatha komntwana wakho inxaxheba **kungentando yakhe ngokupheleleyo** kwaye ukhululekile ukuba angarhoxa ekuthatheni inxaxheba. Ukuba uthi hayi, oku akusayi kuchaphazela ukungavumi kwakhe nangayiphina indlela. Ukwakhululekile ukuba ukumyekisa kwesi sifundo naninina, nkqu nokokuba ubuvumile ukuba athatha inxaxheba ekuqaleni.

**Olu phando luvunywe ziinqobo ezisesikwenize** Komiti yoPhando Lomntu kwiYunivesithi yaseStellenbosch **kwaye luzakwenziwa ngokwemigaqo esesikweni lophando elamkelekileyo kwiSaziso sehlabathi sika-Helsinki, iMigaqo eLungileyo yoMzantsi Afrika**

**yokuSebenza eKliniki kunye neBhunga lezoPhando ngamaYeza (MRC) iMigaqo yeNqobo yezoPhando.**

**Simalunga nantoni esi sifundo sophando?**

Injongo yolu phando kukungqamanisa imilinganiselo yemizimba yabafundi bamabanga aphakamileyo abaminyaka yobudala iqalela kweli-13 kude kufikwe kweli-18 bengingqi yesiXeko seKapa abanobubanzi obulingana nesitulo esihlala umntu osebenzisa ikhompuyutha. Kwesinye sezifundozethu zangaphambili kwafumaniseka ukuba ama-73 eepesenti zabafundi bamabanga aphakamileyo kwisiXeko seKapa baziva besezintlungwini ngeli xesha bahleli ezidesikeni besebenzisa iikhompuyutha. Kwisifundo esahlukileyo kunikwe ingxelo yokuba imiqondiso zezihlunu ezomeleleyo ezikumxokelelwano wamathambo izezona ngxaki zilishumi ziphambili kubafundi bamabanga aphakamileyo. Ngolu phando sinethemba lokuba singancoma uhlobo lwesitulo esisesona sibafaneleyo abafundi beziKolo zeMfundo ePhakamileyo eKapa.

Umntwana wakho angafane akhethelwe ukuthatha inxaxheba kwicandelo elinye okanye kwangaphezulu kwelinye kulawo mathathu ale prowujeki.

KwiCandelo 1 ububanzi bomzimba womntwana ngamnye buza kulinganiselwa kathathu ngabantu abane abahlukileyo abancedisa kulo phando. Imilinganiselo yemizimba yabantu iza kwenziwa ngesixhobo sokulinganisela esingagabangxiyo nesobunzululwazi ekuthiwa yi-Anthropometer, yonke imilinganiselo iya kwenzelwa esikolweni. Ngexesha elinye kuza kulinganiselwa abafundi abane ngabancedisi bophando abane. KwiCandelo 2 kuza kukhethwa isitulo sekhompuyutha esifanelekileyo; kweli icandelo akukho bafundi baza kubandakanyeka. KwiCandelo 2 abafundi baza kuxilongwa kwiLebhu yokuCalula iNtshukumo kwiDyunivesithi yaseStellenbosch. Kuza kucalulwa ukuma nqo komzimba womfundi ngeli xesha ahleli esikolweni, emva koko ukuma kwakhe kuza kuhlalelwa xa ekweso situlo sikhethiweyo. Olu calulo luza kwenziwa ngokubekwa kwemibhalo engacimiyo nengagabangxiyo kubafundi, leyo iza kubonakala kwiNkqubo yoCalulo lweNtshukumo yeVicon. Abafundi baza kuhlala benxibe impahla yabo ngeli xesha baxilongwayo.



Ngexesha leCandelo 1 abafundi baza kuphoswa yiyure enye kuphela yexesha lesikolo, kanti ngexesha leCandelo 2 baza kuphantse baphoswe ziiyure ezi-4 zesikolo. Awona maxesha lungele ingxilongo kuza kuvunyelwana ngawo ngumphandi oyintloko nenqununu yesikolo.

### **Kutheni emenyiwe umntwana wakho ukuba uthathe inxaxheba?**

Isikolo afunda kuso umntwana wakho sifane sakhethwa kwezo zilapho kwisiXeko seKapa. Abafundi abaminyaka yobudala iqalela kwi-13 kude kufikwe kweli-18 bamemnyelwe ukuba mabathathe inxaxheba kwesi sifundo.

### **Luyakuba yintoni uxanduva lwakho?**

Uxanduva lwakho kuphela lukukubonelela ngemvume xa umntwana uthanda ukuba makathathe inxaxheba kwesi sifundo. Ukuqokelelwa kweenkcukacha kuza kuthatha ixesha kuphela abafundi begumbi elinye abajongene nelo candela, oku kwenzelwa ukunqanda ukuba abafundi mabangaphoswa ngumsebenzi wesikolo obalulekileyo.

### **Ingaba uza kuzuza umntwana wakho ekuthatheni inxaxheba kolu phando?**

Intatho-nxaxheba yomntwana wakho iza kulanceda iqela eliphandayo ekuqulunqeni izikhokelo zemfundo malunga nokuhlala komntu esitulweni athi nkqo nenkuthazo yempilo entle yelungu elingumqolo. Umntwana wakho, nabanye abasaza kufunda bangancedakala, ezi zikhokelo zingazinciphisa iintlungu zomqolo nezamagxa eziviwayo ngabantwana abasebenzisa iikhompyutha. Oku kuthintela ulutsha ukuba lungabinazo iingxaki zemisipha nezezihlunu zexesha elide.

### **Ingaba zikho iingozi ezibandakanyekayo ekuthatheni komntwana wakho inxaxheba kolu phando?**

Awukho umngcipheko ekungenwa kuwo xa kuthathwa inxaxheba kule prowujkti yophando.

### **Ngubani uza kufumana ingxelo yomntwana wakho yamayeza?**

Zonke iinkcukacha eziqokelelweyo kule projekti ziza kugcinwa ziyimfihlelo yaye ziza kukhuselwa. Ukuba ezi nkcukacha ziyasetyenziswa kwithisisi okanye elupapashweni, igama lomntwana wakho alisayi kukhankanywa, akakho oya kumchonga. Ngumphandi kuphela kunye neqela aphanda nalo abaza kufikelela kwezo nkcukacha. Imibhalo eneenkcukacha iza kugcinwa apho kukhuselekileyo *kwiSebe le-Physiotherapy leDyunivesithi yaseStellenbosch*.

### **Kuza kwenzeka ntoni kwimeko yesiganeko esingalindekanga sokwenzakala komntwana wakho nangephina indlela; ngenxa yokuthatha kwakhe inxaxheba kwesi sifundo sophando?**

Awukho umngcipheko wokwenzakala.

Ingaba wean okanye umntwana uza kuhlawulwa ngokuthatha inxaxheba kwesi sifundo kwaye ingaba kukho iindleko ezibandakanyekayo?

Wena okanye umntwana wakho akasayi kuhlawulwa ngokuthatha inxaxheba kwesi sifundo, kodwa isithuthi sakho/sakhe neendleko zokutya ziza kuhlawulelwa kundwendwelo ngalunye lwesifundo. Akusayi kubakho zindleko ezibandakanyelwa wena, ukuba umntwana wakho uthatha inxaxheba.

Ingaba ikho enye into ekumele uyazi okanye uyenze?

- Ungaqhagamshelana no ...Sjan-Mari van Niekerk..... kule inombolo yomnxeba ...071 6739748 ukuba unemibuzo engaphaya okanye uhlangabezana neengxaki.
- Ungaqhagamshelana neKomiti yoPhando Lomntu kwa-021-938 9207 ukuba unenkxalabo okanye izikhalazo ezingasonjululwanga kakuhle ngugqirha wesifundo somntwana wakho.
- Uza kufumana ikopi yolu lwazi kunye nefomu yemvumelwano ukwenzela iingxelo zakho.

Imvume yomntwana

Mna (Igama lomntwana)..... ndimenyiwe ukuba ndithathe inxaxheba kule projekthi yophando ingentla.

- Ugqirha wesifundo/umongikazi kunye nabazali bam bandichazele iinkcukacha zesifundo kwaye ndiyakuqonda abandixelele kona.
- Bakwandicacisele ukuba esi sifundo siza kubandakanya (chaza nayiphina inkqubo ehlaselayo kuquka ukuthathwa kwegazi, *ukuthiwa kwamanzi njl njl.*)
- Kwaye ndiyazi ukuba ndikhululekile ukuba ndirhoxe kwisifundo ukuba andonwabanga.
- Ngokubhala igama lam ngezantsi, ndivuma ngokuzithandela ukuthatha inxaxheba kule projekthi yophando. Ndiyaqinisekisa ukuba andikhange ndinyanzelwe ngabazali okanye ugqirha ukuba ndithathe inxaxheba.

.....

Igama lomntwana

(Kumele libhalwe ngumntwana)

.....

Inggina elizimeleyo

**Isifungo somzali/somngcini-mntwana osemthethweni**

Ngokutyikitya apha ngezantsi, Mna (*igama lomzali/lomngcini-mntwana osemthethweni*) ..... ndiyamvumela umntwana wam (igama lomntwana) ..... oneminyaka ..... ubudala, ukuba athathe inxaxheba kwisifundo sophando esinesi sihloko (*faka isihloko sesifundo*)

Ndiyafunga ukuba:

- Ndilufundile okanye ndalufunda olu lwazi kunye nefomu yemvumelwano kwaye ibhalwe ngolwimi endiliciko nendikhululekileyo kulo
- Umntwana wam uneminyaka esi-7 ubudala, kumele avume ukuthatha inxaxheba kwisifundo kwaye IMVUME yakhe kumele ishicilelwe kule fomu.
- Bendinalo ithuba lokuba ndibuze imibuzo kwaye yonke imibuzo yam iphendulwe ngokwanelisayo.
- Ndiyakuqonda ukuba ukuthatha inxaxheba kolu phando **kukuzithandela** kwaye andikhange ndinyanzelwe ukuba ndivumele umntwana wam athathe inxaxheba.
- Ndingakhetha ukuba asishiya isifundo naninina umntwana wam kwaye akasayi kohlwaywa okanye aqal' agwetywe nangayiphi indlela.
- Umntwana wam usenokucelwa ukuba asishiye isifundo phambi kokuba sipele, ukuba ugqirha wesifundo okanye umphandi ukubona kuyinzuzo kumntwana wam, okanye ukuba umntwana wam akandisilandeli isicwangciso sesifundo ekuvunyelenwe ngaso.

Kutyikitywe e-(indawo) ..... ngo-(usuku) ..... 2010.

.....  
**Umtyikityo womzali/womgcini-mntwana osemthethweni**

.....  
**Umtyikityo wengqina**

**Isifundo somphandi**

Mna (*igama*) ..... ndiyafunga ukuba:

- Ndilucacisile ulwazi olu kweli xwebhu ku-.....
- Ndimkhuthazile ukuba abuze imibuzo kwaye athathe ixesha elifanelekileyo ukuba ayiphendule.
- Ndiyaneliseka kukuba uyakuqonda ngokwanelisayo konke okumalunga nophando okuxoxwe ngasentla.

- Ndisebenzise/andisebenzisanga toliki. (*Ukuba itoliki isetyenzisiwe kumele ityikitye isaziso ngezantsi.*)

Kutyikitywe e-(indawo) ..... ngo-(usuku) ..... 2010.

.....

.....

Umtyikityo womphandi

Umtyikityo wengqina

### Isifungo setoliki

Mna (*igama*) ..... ndazisa ukuba:

- Ndicende umphandi (*igama*) ..... Ekucaciseni ulwazi olu lapha kweli xwebhu ku-(*igama lomthathi-nxaxheba*) ..... ndisebenzisa ulwimi lwesiAfrikaans/lwesiXhosa.
- Simkhuthazile ukuba abuze imibuzo kwaye athathe ixesha elifanelekileyo ukuba ayiphendule.
- Ndimxelele eyona nto iyiyo malunga nokunxulumene nam.
- Ndiyaneliseka kukuba umzali/umgcini-mntwana ukuqonda ngokupheleleyo okuqulathwe loluxwebhu lwemvumelwano eyazisiweyo kwaye nemibuzo yakhe yonke iphendulwe ngokwanelisayo.

Kutyikitywe e-(indawo) ..... ngo-(usuku) ..... 2010.

.....

.....

Umtyikityo wetoliki

Umtyikityo

wengqina

## **Addendum E: Consent form (for students 18 years of age)**

### **PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM**

#### **TITLE OF THE RESEARCH PROJECT:**

Ergonomic chair design for school computer laboratories in the Cape Metropole, Western Cape, South Africa

#### **REFERENCE NUMBER:**

**PRINCIPAL INVESTIGATOR:** Sjan-Mari van Niekerk (M.Sc. Physiotherapy)

**ADDRESS:** Division Physiotherapy, Department Interdisciplinary Health Sciences, Faculty of Medicine and Health Sciences, University of Stellenbosch, Tygerberg campus

**CONTACT NUMBER: 071 673 9748**

You are being invited to take part in a research project. Please take some time to read the information presented here, which will explain the details of this project. Please ask the study staff or doctor any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research entails and how you could be involved. Also, your participation is **entirely voluntary** and you are free to decline to participate. If you say no, this will not affect you

negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part.

This study has been approved by the Health Research Ethics Committee (HREC) at Stellenbosch University and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, South African Guidelines for Good Clinical Practice and the Medical Research Council (MRC) Ethical Guidelines for Research.

### **What is this research study all about?**

The aim of this research project is to match the body measurements of high school students aged 13 to 18 years in the Cape Metropole area with the dimensions of the school computer chair. In one of our previous studies, it was found that 73% of high school students in the Cape Metropole experience pain while using a desktop computer. In a different study, it has been reported that musculoskeletal symptoms are one of the top ten health problems among high school students. With this study, we hope to be able to recommend the most appropriate chair for our students in Cape high schools.

You might be randomly selected to take part in either one or both phases of this project. In phase 1, your body dimensions will be measured by one of four different research assistants. The measurements will be made with a non-invasive measuring tape and all measurements will be done at the school. Four research assistants will measure four students simultaneously. In Phase 2, an appropriate computer chair will be selected, and the students will be tested at the Motion Analysis Laboratory at the Stellenbosch University. The students' posture will be analysed while they first sit in a school chair and then in the

proposed chair. The analysis will be done by placing non-invasive markers on the students, which will be visible to the Vicon Motion Analysis System. You will remain clothed during all testing procedures.

During Phase 1 you will only miss one hour of schooling and during Phase 3 you will miss roughly 4 hours of schooling. The most appropriate times for testing will be agreed upon by the main researcher and the school principal.

**Why have you been invited to participate?**

The school that you attend was randomly selected from all schools that form part of the Cape Metropole. The 13- to 18-year-old students from your school have been invited to participate in the study.

**What will your responsibilities be?**

Your responsibility is only to provide consent, should you agree to participate in the study. Data collection will only take up the time of one class per phase, in order to avoid students missing significant schoolwork.

**Will you benefit from taking part in this research?**

Your participation will help the research team to develop educational guidelines on sitting posture and the promotion of good spinal health. You and future students may benefit, since these guidelines may reduce the incidence of spinal and shoulder pain experienced by



children using computers and thus prevent youth from developing long-term joint and muscle problems.

**Are there any risks involved in your taking part in this research?**

There are no risks involved in participating in this research project.

**Who will have access to your medical records?**

All the information collected with this project will be treated as confidential, and will be protected. If this information is used in a thesis or publication, your identity will remain anonymous. Only the researcher and her team will have access to the information. The records will be kept in safe storage in the Physiotherapy Department, Stellenbosch University.

**What will happen in the unlikely event of some form of injury occurring as a direct result of your taking part in this research study?**

The testing will take part at The Department of Physiotherapy at Stellenbosch University. The school or Stellenbosch University will provide transport and third-party insurance will cover you if the vehicle should be involved in an accident.

**Will you be paid to take part in this study and are there any costs involved?**

No, you will not be paid to take part in the study, but your transport and meal costs will be covered for each study visit. There will be no costs involved for you, if you do take part.

**Is there anything else that you should know or do?**

- *You can contact Sjan-Mari van Niekerk at tel. 071 673 974 if you have any further queries or encounter any problems.*
- You can contact the Health Research Ethics Committee at 021-938 9207 if you have any concerns or complaints that have not been adequately addressed by your study doctor.
- You will receive a copy of this information and consent form for your own records.

**Declaration by participant**

By signing below, I ..... agree to take part in a research study entitled *Ergonomic chair design for school computer laboratories in the Cape Metropole, Western Cape, South Africa.*

**I declare that:**

- I have read or had read to me this information and consent form and it is written in a language with which I am fluent and comfortable.
- I have had a chance to ask questions and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part.

- I may choose to leave the study at any time and will not be penalised or prejudiced in any way.
- I may be asked to leave the study before it has finished, if the study doctor or researcher feels it is in my best interests, or if I do not follow the study plan, as agreed to.

Signed at (*place*) ..... on (*date*) ..... 2009.

.....

Signature of participant

.....

Signature of witness

**Declaration by investigator**

I (*name*) ..... declare that:

- I explained the information in this document to .....
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above.
- I did /did not use a interpreter. (*If an interpreter is used then the interpreter must sign the declaration below.*)

Signed at (*place*) ..... on (*date*) ..... 2010

.....

.....

Signature of investigator

Signature of witness

**Declaration by interpreter**

I (*name*) ..... declare that:

- I assisted the investigator (*name*) ..... to explain the information in this document to (*name of participant*) ..... using the language medium of Afrikaans/isiXhosa.
- We encouraged him/her to ask questions and took adequate time to answer them.
- I conveyed a factually correct version of what was related to me.
- I am satisfied that the participant fully understands the content of this informed consent document and has had all his/her questions satisfactorily answered.

Signed at (*place*) ..... on (*date*) .....

.....

.....

Signature of interpreter

Signature of witness

## **DEELNEMERINLIGTINGSBLAD EN -TOESTEMMINGSVORM**

### **TITEL VAN DIE NAVORSINGSPROJEK:**

Die ontwikkeling van 'n ergonomies korrekte stoel vir rekenaar laboratoriums in die Kaapse Metropool, Wes-Kaap, Soud Afrika.

### **VERWYSINGSNOMMER:**

**HOOFNAVORSER:** Sjan-Mari van Niekerk (M.Sc. Fisioterapie)

**ADRES:** Afdeling Fisioterapie, Departement Interdissiplinêre Gesondheidswetenskappe, Fakulteit Mediese en Gesondheidswetenskappe, Stellenbosch Universiteit, Tygerberg Kampus.

**KONTAKNOMMER:** 071 673 9748

U word genooi om deel te neem aan 'n navorsingsprojek. Lees asseblief hierdie inligtingsblad op u tyd deur aangesien die detail van die navorsingsprojek daarin verduidelik word. Indien daar enige deel van die navorsingsprojek is wat u nie ten volle verstaan nie, is u welkom om die navorsingspersoneel of dokter daarvoor uit te vra. Dit is baie belangrik dat u ten volle moet verstaan wat die navorsingsprojek behels en hoe u daarby betrokke kan wees. U deelname is ook **volkome vrywillig** en dit staan u vry om deelname te weier. U sal op geen wyse hoegenaamd negatief beïnvloed word indien u sou weier om deel te neem nie. U mag ook te eniger tyd aan die navorsingsprojek onttrek, selfs al het u ingestem om deel te neem.

**Hierdie navorsingsprojek is deur die Komitee vir Mensnavorsing van die Universiteit Stellenbosch goedgekeur en sal uitgevoer word volgens die etiese riglyne en beginsels van die Internasionale Verklaring van Helsinki en die Etiese Riglyne vir Navorsing van die Mediese Navorsingsraad (MNR).**

### **Wat behels hierdie navorsingsprojek?**

Die doel van die studie is om die liggaamsmates van hoërskool leerlinge tussen die ouderdomme van 13 en 18 jaar, in die Kaapse Metropool area, met die afmetings van die skool se rekenaar stoele te vergelyk. In een van ons vorige studies is daar gevind dat 73% van hoërskool leerlinge pyn ervaar tydens die gebruik van 'n rekenaar. In 'n ander studie is daar gevind dat muskuloskeletale pyn een van die top tien gesondheidsprobleme van skoolleerlinge is. Die mees geskikte stoel moet vasgestel word.

U mag dalk lukraak gekies word om deel te neem aan een of meer van die drie fases van die projek. In Fase 1 word elke leerling een maal gemeet deur een van vier verskillende navorsingsassistentente. Die afmetings sal met 'n nie-indringende maatband geneem word en alle afmetings sal by die skool geneem word. Vier leerlinge sal gelyktydig gemeet word deur vier navorsingsassistentente. Gedurende Fase 2 word die mees toepslike stoel gekies vir hoërskool leerlinge; geen leerlinge word benodig tydens hierdie deel van die fase nie. Daarna sal leerlinge by Stellenbosch Universiteit se Bewegingsanaliese Labratorium getoets word. Die leerlinge se sit-postuur sal geanaliseer word terwyl hulle eers in 'n stoel sit wat gewoonlik by die skool gebruik word en dan in die voorgeskrewe stoel sit. Die analiese word gedoen deur merkers op die leerlinge te plaas wat dan deur die VICON bewegingsanaliese

sisteem geanaliseer word. Die leerlinge sal ten alle tye geklee bly. Gedurende Fase 1 sal die lukraak gekose leerlinge slegs 1 uur van skool mis en gedurende Fase 3 om en by vier ure. Die mees gepaste tye vir die afmetings sal met die skoolhoof onderhandel word.

**Waarom is u genooi om deel te neem?**

Die skool waaraan u behoort is lukraak gekies uit al die skole in die Kaapse Metropol. Die 13 tot 18jarige leerders van die skool is genooi om deel te neem aan die projek.

**Wat sal u verantwoordelikhede wees?**

U is slegs verantwoordelik om toestemming te gee vir u deelname aan die projek indien u sou instem. Die data opname sal slegs een periode duur om te verhoed dat leerders belangrike skool werk sal mis.

**Sal u voordeel trek deur deel te neem aan hierdie navorsingsprojek?**

U deelname help die navorsingspan om opvoedkundige riglyne op te stel vir die korrekte sittende postuur en die bevordering van goeie rug gesondheid. U en toekomstige leerders kan voordeel trek aangesien hierdie riglyne die voorkoms van rug en skouer pyn deur kinders wat rekenaars gebruik ervaar word, kan help voorkom. Dit sal ook help met die voorkoming van langtermyn gewrig- en spierprobleme.

**Is daar enige risiko's verbonde aan u deelname aan hierdie navorsingsprojek?**

Daar is geen gevare verbonde aan die deelname aan hierdie navorsingsprojek nie.

**Wie sal toegang hê tot u mediese rekords?**

Alle inligting wat ingesamel word in hierdie projek word as konfidensieel beskou en sal sodanig beskerm word. Indien hierdie inligting in 'n tesis of ander publikasie gebruik word sal u kind se identiteit anoniem bly. Slegs die navorser en haar span sal toegang hê tot die inligting. Die rekords sal veilig gestoor word by die Fisioterapie Departement, Stellenbosch Universiteit.

**Wat sal gebeur in die onwaarskynlike geval van 'n besering wat mag voorkom as gevolg van u deelname aan hierdie navorsingsprojek?**

Die toetsing vind plaas by die Departement van Fisioterapie by Stellenbosch Universiteit. Vervoer word verskaf deur die skool of die Universiteit Stellenbosch. Daar is derde party versekering wat u sal dek indien die voertuig in 'n ongeluk betrokke sou wees.

**Sal u betaal word vir deelname aan die navorsingsprojek en is daar enige koste verbonde aan deelname?**

Nee, u sal betaal word vir deelname aan die projek nie. Deelname aan die projek sal u niks kos nie.

**Is daar enigiets anders wat u moet weet of doen?**

- U kan Sjan-Mari van Niekerk kontak by tel 071673 9748 indien u enige verdere vrae het of enige probleme ondervind.



- U kan die Komitee vir Mensnavorsing kontak by 021-938 9207 indien u enige bekommernis of klagte het wat nie bevredigend deur u studiedokter hanteer is nie.
- U sal 'n afskrif van hierdie inligtings- en toestemmingsvorm ontvang vir u eie rekords.

### Verklaring deur deelnemer

Met die ondertekening van hierdie dokument onderneem ek, ....., om deel te neem aan 'n navorsingsprojek getiteld 'Die ontwikkeling van 'n ergonomies korrekte stoel vir rekenaar laboratoriums in die Kaapse Metropool.

Ek verklaar dat:

- Ek hierdie inligtings- en toestemmingsvorm gelees het of aan my laat voorlees het en dat dit in 'n taal geskryf is waarin ek vaardig en gemaklik mee is.
- Ek geleentheid gehad het om vrae te stel en dat al my vrae bevredigend beantwoord is.
- Ek verstaan dat deelname aan hierdie navorsingsprojek **vrywillig** is en dat daar geen druk op my geplaas is om deel te neem nie.
- Ek te eniger tyd aan die navorsingsprojek mag onttrek en dat ek nie op enige wyse daardeur benadeel sal word nie.

- Ek gevra mag word om van die navorsingsprojek te onttrek voordat dit afgehandel is indien die studiedokter of navorser van oordeel is dat dit in my beste belang is, of indien ek nie die ooreengekome navorsingsplan volg nie.

Geteken te (*plek*) ..... op (*datum*) ..... 2010.

.....

Handtekening van deelnemer

.....

Handtekening van getuie

### Verklaring deur navorser

Ek (*naam*) ..... verklaar dat:

- Ek die inligting in hierdie dokument verduidelik het aan .....
- Ek hom/haar aangemoedig het om vrae te vra en voldoende tyd gebruik het om dit te beantwoord.
- Ek tevrede is dat hy/sy al die aspekte van die navorsingsprojek soos hierbo bespreek, voldoende verstaan.
- Ek 'n tolk gebruik het/nie 'n tolk gebruik het nie. (*Indien 'n tolk gebruik is, moet die tolk die onderstaande verklaring teken.*)

Geteken te (*plek*) ..... op (*datum*) ..... 2010.

.....

.....

Handtekening van navorder

Handtekening van getuie

### **Verklaring deur tolk**

Ek (*naam*) ..... verklaar dat:

- Ek die navorser (*naam*) ..... bygestaan het om die inligting in hierdie dokument in Afrikaans/Xhosa aan (*naam van deelnemer*) ..... te verduidelik.
- Ons hom/haar aangemoedig het om vrae te vra en voldoende tyd gebruik het om dit te beantwoord.
- Ek 'n feitelik korrekte weergawe oorgedra het van wat aan my vertel is.
- Ek tevrede is dat die deelnemer die inhoud van hierdie dokument ten volle verstaan en dat al sy/haar vrae bevredigend beantwoord is.

Geteken te (*plek*) ..... op (*datum*) ..... 2010.

.....

Handtekening van tolk

.....

Handtekening van getuie



### Addendum F: Raw data of research assistants training session

	Assistant 1			Assistant 2			Assistant 3			Assistant 4			Assistant 5			Assistant 6			Assistant 7		
<b>Stature</b>																					
<b>Weight</b>																					
<b>PH</b>																					
<b>BPL</b>																					
<b>HW</b>																					

### Addendum G: Median and IQR of the head, thorax and pelvic angles in all three movement planes

Pelvis										
Subject ID	Chair	Tilt			Side-flexion			Rotation		
		Median (IQR)	Min median	Max. median	Median (IQR)	Min median	Max. median	Median (IQR)	Min median	Max. median
S01	Prototype	-3(1.2)	-3.8	-0.2	-2.8(2.3)	-6.7	-0.3	-48.6(1.8)	-50.1	-46.3
	School	-0.5(1.1)	-1.5	2.6	-9.6(3.2)	-12.4	-2.4	39.5(0.8)	38.5	40.0
S02	Prototype	3.2(11.4)	-2.0	15.5	-7.6(6.1)	-9.5	10.0	39.7(89.2)	-44.7	48.5
	School	6.3(1.8)	5.9	8.1	-0.4(1.9)	-2.3	0.5	-41.1(0.3)	-41.2	-40.8
S03	Prototype	0.9(1.9)	-1.3	3.0	2.2(5.4)	-2.5	3.9	39.1(84.4)	-49.4	43.4
	School	-0.3(2.6)	-2.0	1.9	4.6(2.5)	3.3	6.8	42.9(0.6)	42.4	43.4
S04	Prototype	-18.8(2.5)	-3.8	-0.2	21.4(1.9)	-6.7	-0.3	-38.4(2.4)	-50.1	-46.3
	School	-22.9(2.5)	-25.6	-20.5	-15.4(1.3)	-17.6	-14.0	36.1(0.6)	34.3	36.9
S05	Prototype	-9.8(3.2)	-12.6	-1.5	4.5(2.0)	-9.8	6.0	-40.1(2)	-44.7	-38.4
	School	-2.8(2.2)	-4.5	-0.4	-1.5(3.4)	-5.6	2.3	-40.5(0.5)	-41.0	-39.7
S06	Prototype	-0.1(1.4)	-0.9	0.5	-1.6(5.3)	-4.5	2.4	44.4(3.9)	40.5	49.6
	School	-7.9(4.5)	-10.4	0.9	13.7(5.1)	7.4	14.7	-37.7(3.3)	-41.2	-35.7
S07	Prototype	-11.6(1.7)	-13.7	-9.5	-5.9(1.7)	-6.9	-4.0	31.6(1.9)	30.1	33.3
	School	-13.8(1.3)	-14.7	-11.7	-14.3(0.9)	-15.8	-13.1	40.6(1.1)	39.6	41.9

<b>S09</b>	<b>Prototype</b>	-25.8(3.7)	-29.2	-21.8	21.8(44.8)	-28.6	25.7	-33.1(75.7)	-38.3	48.4
	<b>School</b>	-34.5(2.7)	-37.7	-32.6	24.7(1.2)	23.7	26.8	-26.7(1.2)	-27.8	-25.8
<b>S10</b>	<b>Prototype</b>	-8.9(5.4)	-29.2	-21.8	6.9(5.0)	-28.6	25.7	-37.6(7.1)	-38.3	48.4
	<b>School</b>	-8.6(10.5)	-1.5	2.6	7.4(10.3)	0.6	13.7	-36.7(2.1)	-38.1	-34.0
<b>S11</b>	<b>Prototype</b>	-13.1(1.9)	-14.3	-11.8	-14.2(3.1)	-15.7	-11.5	39.4(1.7)	37.9	40.6
	<b>School</b>	-8.5(1.5)	-14.2	-11.7	5.4(1.3)	-19.6	-16.1	-42.3(0.3)	40.2	41.5
<b>S12</b>	<b>Prototype</b>	-9.2(4.5)	-10.3	-3.9	2.4(4.4)	0.0	5.3	-42.9(1.2)	-43.7	-41.5
	<b>School</b>	-8.5(1.5)	-10.0	-5.8	5.4(1.3)	3.4	7.1	-42.3(0.3)	-43.1	-42.2
<b>Thorax</b>										
		<b>Flexion/Extension</b>			<b>Side-flexion</b>			<b>Rotation</b>		
<b>Subject ID</b>	<b>Chair</b>	<b>Median (IQR)</b>	<b>Min median</b>	<b>Max. median</b>	<b>Median (IQR)</b>	<b>Min median</b>	<b>Max. median</b>	<b>Median (IQR)</b>	<b>Min median</b>	<b>Max. median</b>
<b>S01</b>	<b>Prototype</b>	-5.3(3.2)	-13.7	-3.0	4.3(7.2)	-13.7	10.6	-41.1(6.8)	-2.2	-3.0
	<b>School</b>	10.4(4.8)	0.0	13.5	5.2(3.3)	-1.9	6.8	42.454571(2.8)	0.0	13.5
<b>S02</b>	<b>Prototype</b>	-4.4(9.6)	-14.7	17.8	0.4(14.1)	-14.7	10.6	36.4(88.6)	-7.2	17.8
	<b>School</b>	14.1(2.3)	11.8	15.0	-18.7(2.4)	-22.6	-16.3	-44.7(1.7)	11.8	15.0
<b>S03</b>	<b>Prototype</b>	2.9(10.2)	-5.2	8.8	-0.6(8.8)	-5.2	1.8	35.3(87.8)	-8.8	8.8
	<b>School</b>	2.2(3.1)	-0.8	3.6	1.3(3.1)	-0.5	4.2	39.3(1.4)	-0.8	3.6
<b>S04</b>	<b>Prototype</b>	5.7(2.0)	-13.7	-3.0	0.2(1.8)	-13.7	10.6	-45.4(2.6)	-2.2	-3.0
	<b>School</b>	3.3(2.3)	1.7	7.4	5.1(3.1)	1.3	8.5	38.6(1.7)	1.7	7.4



<b>S05</b>	<b>Prototype</b>	-2.1(1.5)	-4.8	6.2	7.1(0.8)	-4.8	7.5	-44.7(4.0)	-3.0	6.2
	<b>School</b>	6.2(3.2)	4.3	7.9	-0.6(4.3)	-2.9	3.1	-48.6(2.9)	4.3	7.9
<b>S06</b>	<b>Prototype</b>	-1.8(2.6)	-2.8	-0.5	-7.8(3.9)	-2.8	-5.4	47.3(4.4)	-9.6	-0.5
	<b>School</b>	3.7(5.8)	-8.3	6.7	-6.5(5.7)	-11.0	0.3	-42.3(4.8)	-8.3	6.7
<b>S07</b>	<b>Prototype</b>	7.4(2.6)	5.8	9.9	3.1(4.2)	5.8	6.7	38.3(2.4)	0.4	9.9
	<b>School</b>	5.2(2.1)	3.0	7.3	3.1(2.2)	0.8	4.7	45.4(3.9)	3.0	7.3
<b>S09</b>	<b>Prototype</b>	4.6(6.0)	-7.0	8.2	-4.3(5.4)	-7.0	7.0	-37.5(86.4)	-7.3	8.2
	<b>School</b>	1.2(3.7)	-3.6	3.0	-1.5(3.1)	-3.6	2.1	-45.1(1.1)	-3.6	3.0
<b>S10</b>	<b>Prototype</b>	10.9(3.3)	-7.0	8.2	-12.1(4.0)	-7.0	7.0	-38.3(4.9)	-7.3	8.2
	<b>School</b>	7.9(6.7)	2.8	15.6	-6.5(6.8)	-12.4	-0.9	-38.9(4.1)	2.8	15.6
<b>S11</b>	<b>Prototype</b>	16.3(2.8)	14.4	17.5	7.2(2.1)	14.4	8.6	41.6(2.5)	6.0	17.5
	<b>School</b>	-1.3(1.6)	13.8	17.1	3.1(1.3)	-1.5	4.1	-43.6(1.6)	13.8	17.1
<b>S12</b>	<b>Prototype</b>	4.8(4.7)	-0.5	9.8	2.2(5.1)	-0.5	5.7	-41.5(1.5)	-2.7	9.8
	<b>School</b>	-1.3(1.6)	-2.6	1.2	3.1(1.3)	1.8	4.0	-43.6(1.6)	-2.6	1.2

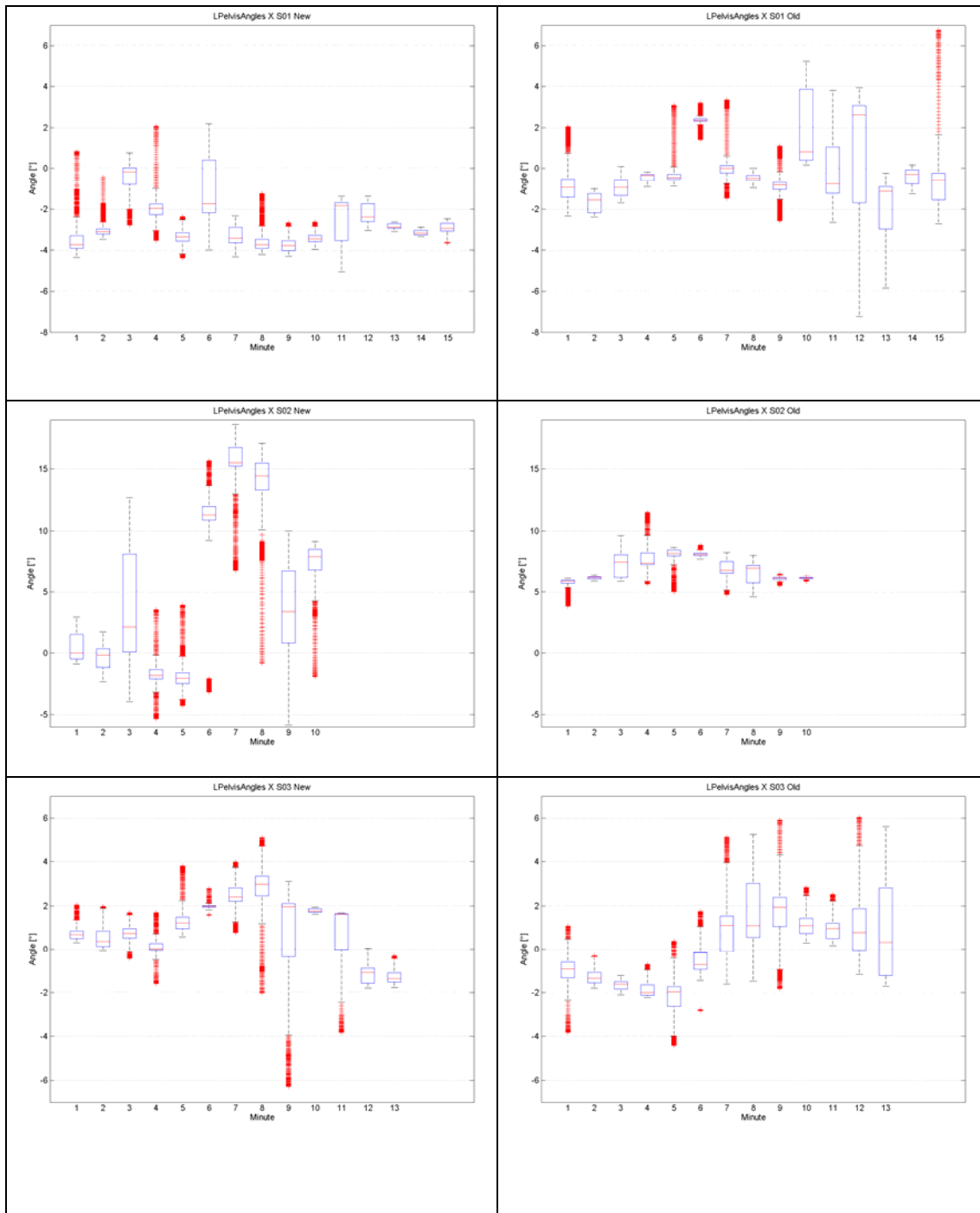
Head										
		Flexion/Extension			Side-flexion			Rotation		
Subject ID	Chair	Median (IQR)	Min median	Max. median	Median (IQR)	Min median	Max. median	Median (IQR)	Min median	Max. median
<b>S01</b>	<b>Prototype</b>	8.3(7.6)	-50.1	-46.3	9.7(5.4)	4.9	13.4	-56.1(10.4)	-61.3	-47.1
	<b>School</b>	6.5(6.1)	38.5	40.0	-4.7(7.6)	-18.2	-1.5	36.8(6.8)	32.9	44.3
<b>S02</b>	<b>Prototype</b>	2.5(7.3)	-44.7	48.5	-0.5(8.1)	-13.5	5.6	18.1(92.4)	-63.0	36.1
	<b>School</b>	-8.1(3.7)	-41.2	-40.8	-8.3(4.3)	-9.8	-5.6	-61.4(6.4)	-63.5	-59.2
<b>S03</b>	<b>Prototype</b>	1.4(10.3)	-49.4	43.4	6.6(6.2)	-1.9	11.4	36.6(85.3)	-52.1	43.0
	<b>School</b>	1.5(7.5)	42.4	43.4	7.1(4.3)	0.7	9.6	37.5(4.6)	35.8	40.6
<b>S04</b>	<b>Prototype</b>	-2.1(4.6)	-50.1	-46.3	-3.4(5.1)	4.9	13.4	-51.2(2.9)	-61.3	-47.1
	<b>School</b>	-1.2(4.1)	34.3	36.9	5.7(4.5)	1.4	7.4	26.1(4.5)	21.7	33.5
<b>S05</b>	<b>Prototype</b>	17.2(3.8)	-44.7	-38.4	18.1(3.0)	-1.8	20.3	-52.1(8.1)	-63.5	-48.2
	<b>School</b>	1.1(18.7)	-41.0	-39.7	5.9(13.5)	-4.7	11.5	-55.2(7.4)	-60.0	-53.3
<b>S06</b>	<b>Prototype</b>	-0.7(11.1)	40.5	49.6	1.5(10.8)	-3.6	3.8	45.8(11.7)	40.9	53.3
	<b>School</b>	4.4(8.7)	-41.2	-35.7	7.3(8.7)	-0.6	11.3	-47.4(9.1)	-50.5	-41.9
<b>S07</b>	<b>Prototype</b>	-3.5(7.6)	30.1	33.3	2.8(5.9)	-7.1	6.8	39.2(5.8)	32.9	42.9
	<b>School</b>	2.8(5.5)	39.6	41.9	0.5(8.4)	-5.9	6.9	39.2(4.5)	32.5	42.8
<b>S09</b>	<b>Prototype</b>	8.3(4.5)	-38.3	48.4	4.7(16.9)	-9.2	11.3	-32.5(86.2)	-38.0	57.2
	<b>School</b>	7.3(4.9)	-27.8	-25.8	9.1(7.3)	1.1	14.5	-43.1(5.6)	-45.8	-40.7

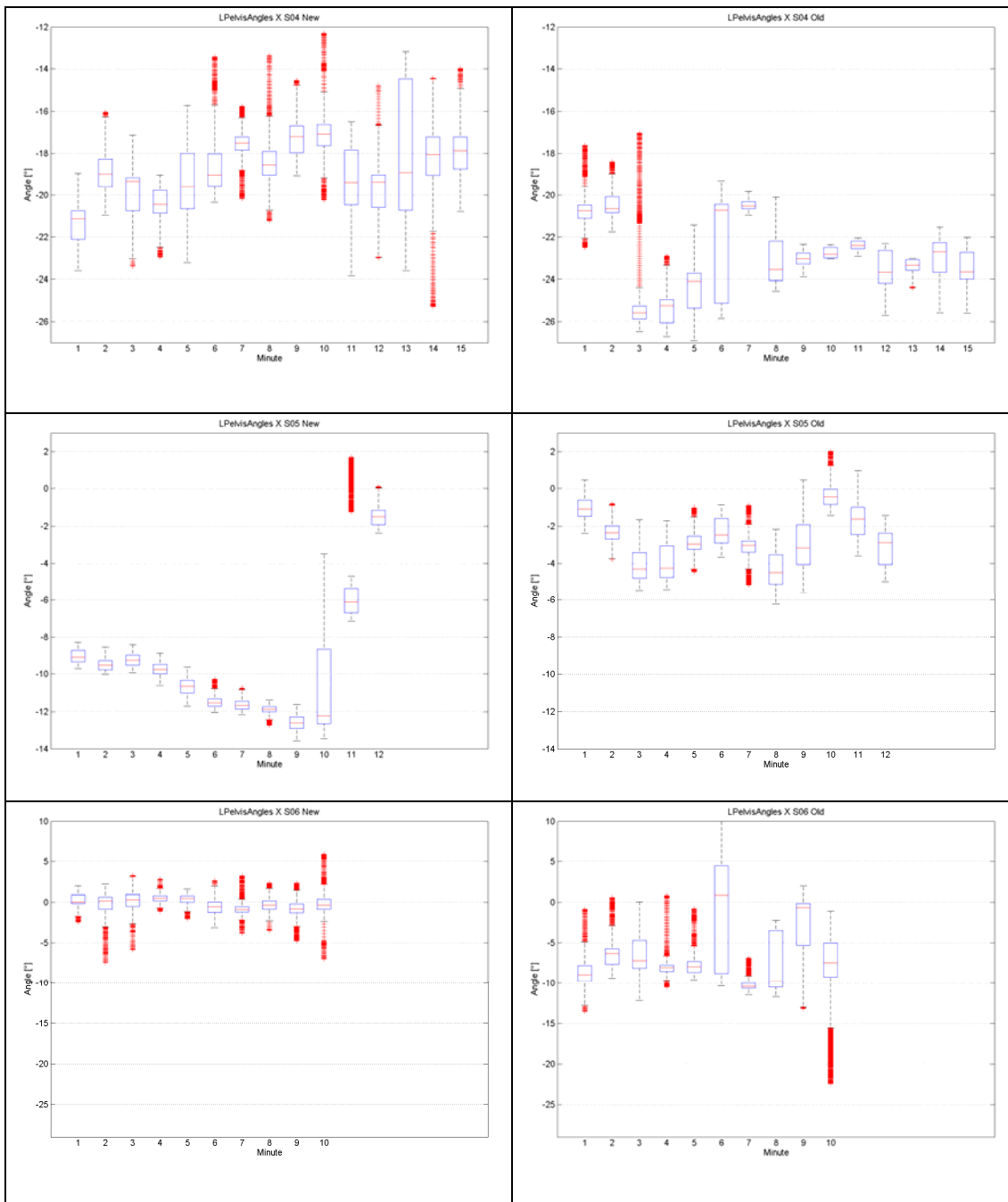
<b>S10</b>	<b>Prototype</b>	-7.2(13.8)	-38.3	48.4	-8.2(19.1)	-9.2	11.3	-47.4(11.4)	-38.0	57.2
	<b>School</b>	3.7(9.5)	-38.1	-34.0	-0.6(14.4)	-8.8	8.6	-57.2(10.1)	-62.6	-50.5
<b>S11</b>	<b>Prototype</b>	-20.3(11.0)	37.9	40.6	7.6(9.6)	0.1	11.9	35.4(4.4)	33.0	37.4
	<b>School</b>	-3.6(4.5)	40.2	41.5	-7.8(6.9)	-4.1	1.7	-47.1(4.2)	31.2	42.4
<b>S12</b>	<b>Prototype</b>	0.8(7.3)	-43.7	-41.5	-6.3(13.1)	-12.3	8.4	-45.9(4.1)	-48.8	-41.3
	<b>School</b>	-3.6(4.5)	-43.1	-42.2	-7.8(6.9)	-11.6	-1.9	-47.1(4.2)	-48.8	-44.6

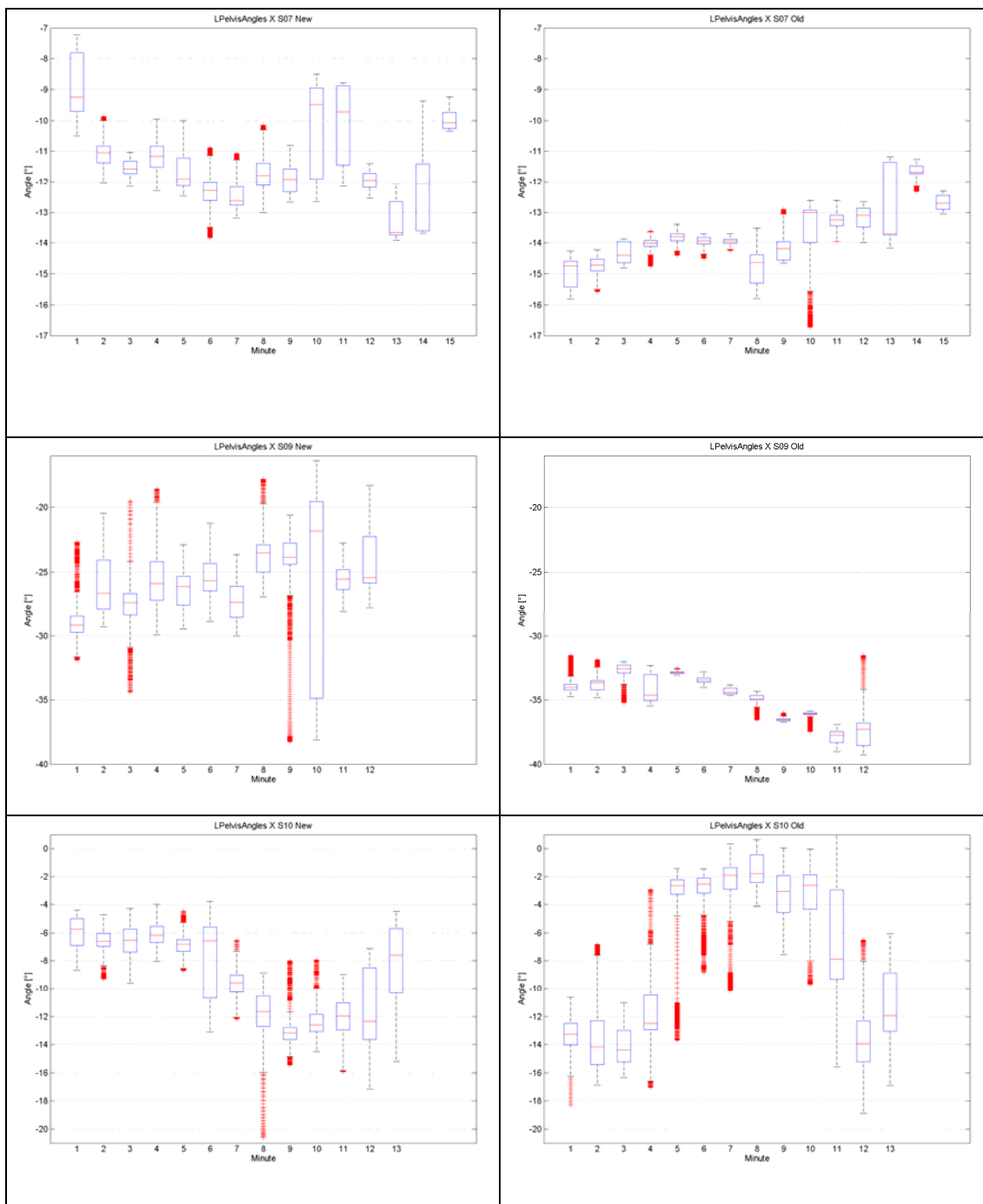
## Addendum H: Per minute box plots for each subject for the pelvis, thorax and head, in all three movement planes (X,Y,Z)

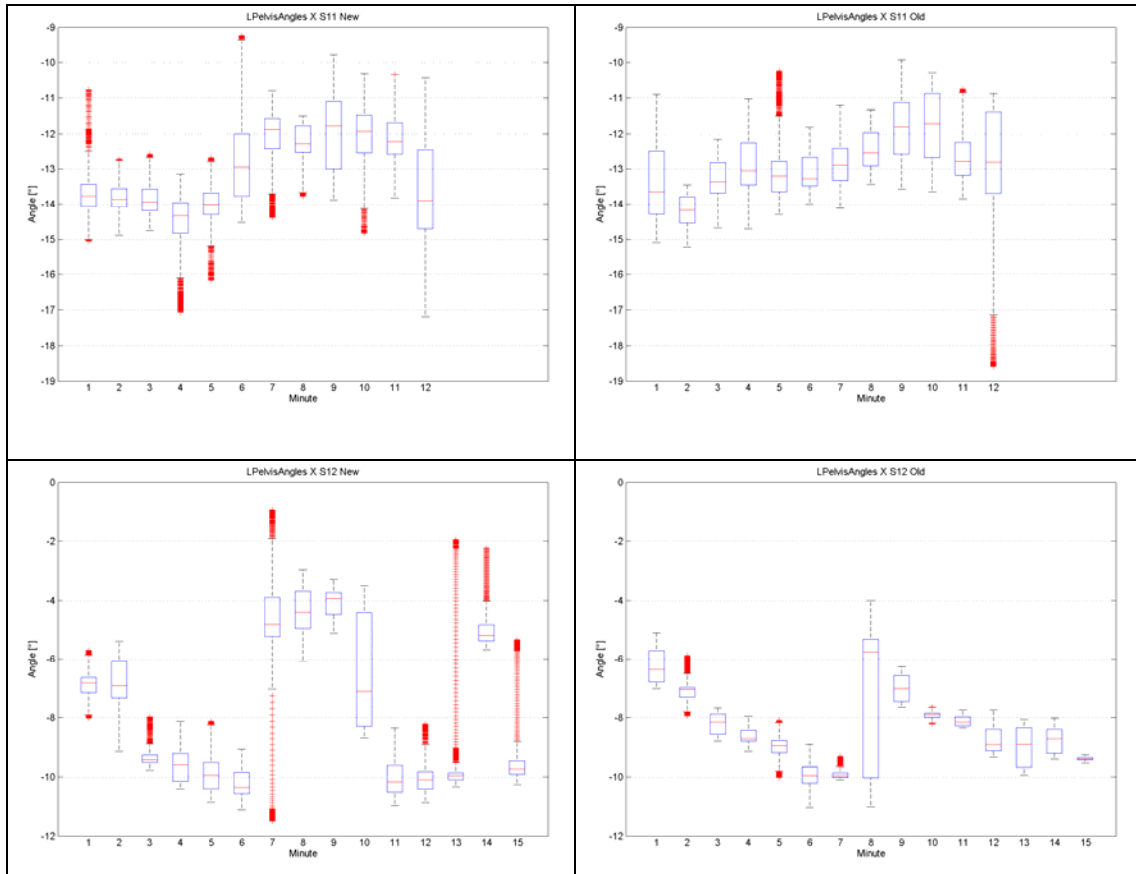
'Old chair' refers to the school chair, and 'new chair' refers to the prototype 'Dynamic' chair.

The first set of graphs is for pelvic tilt (X-axis).

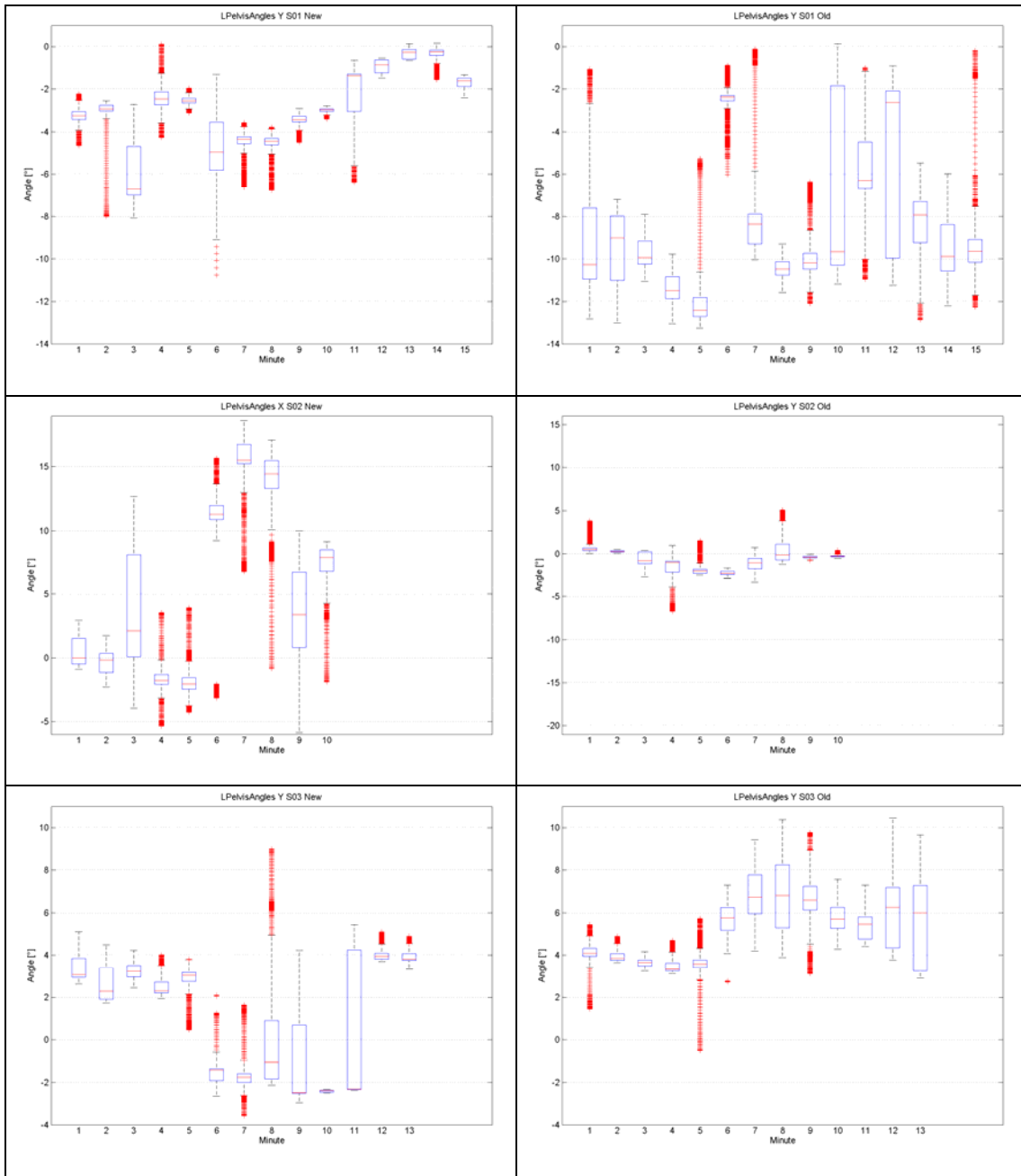




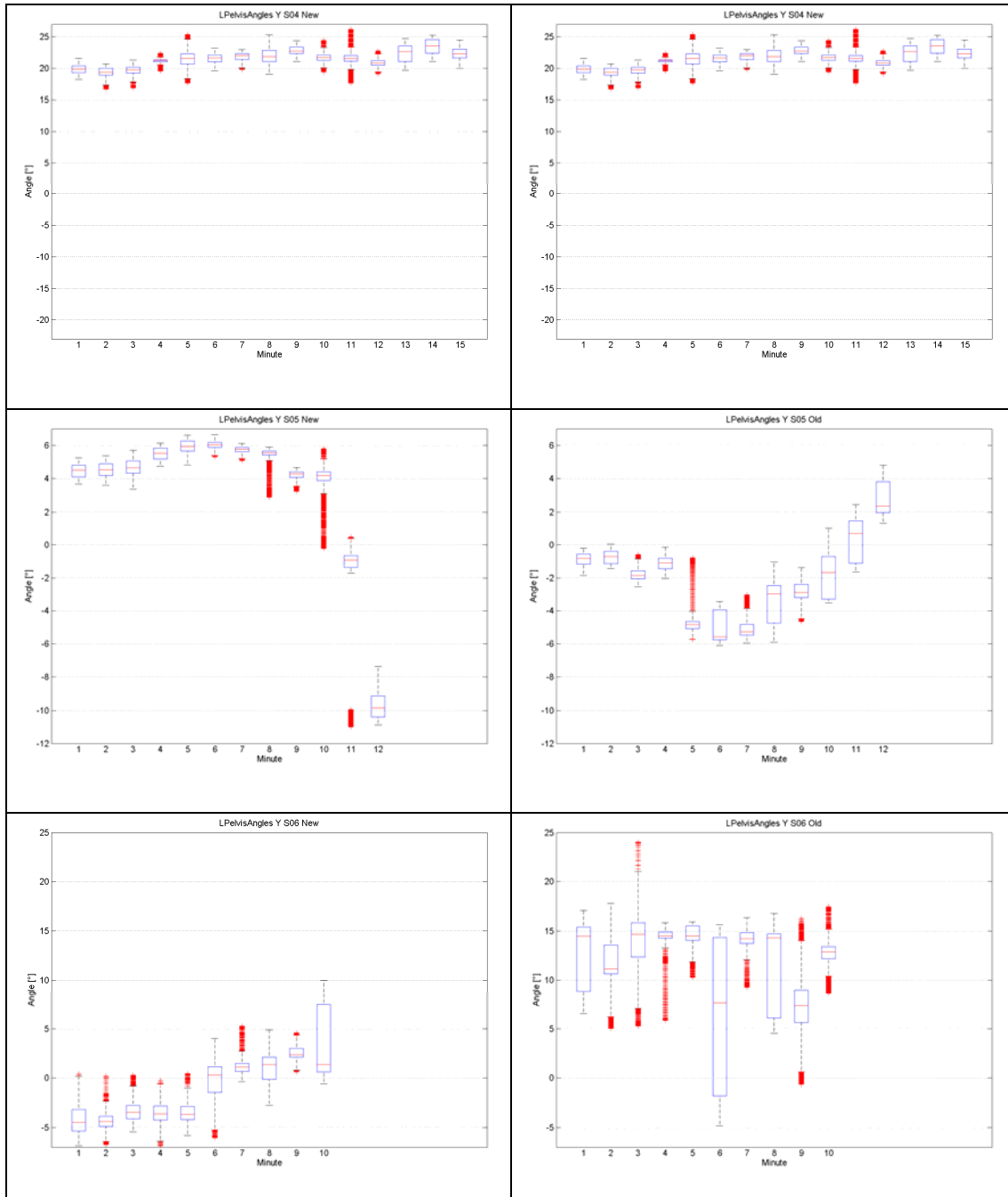


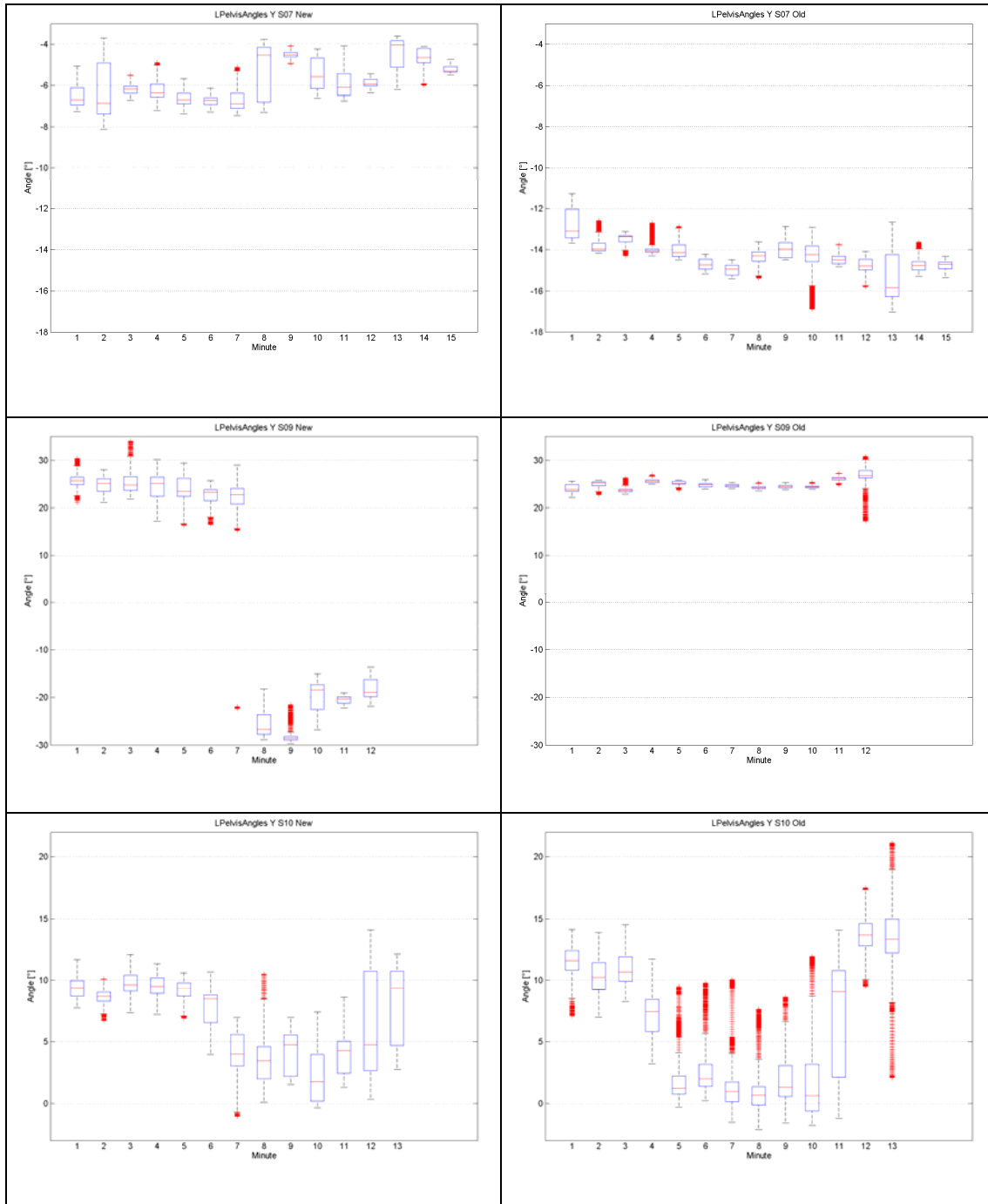


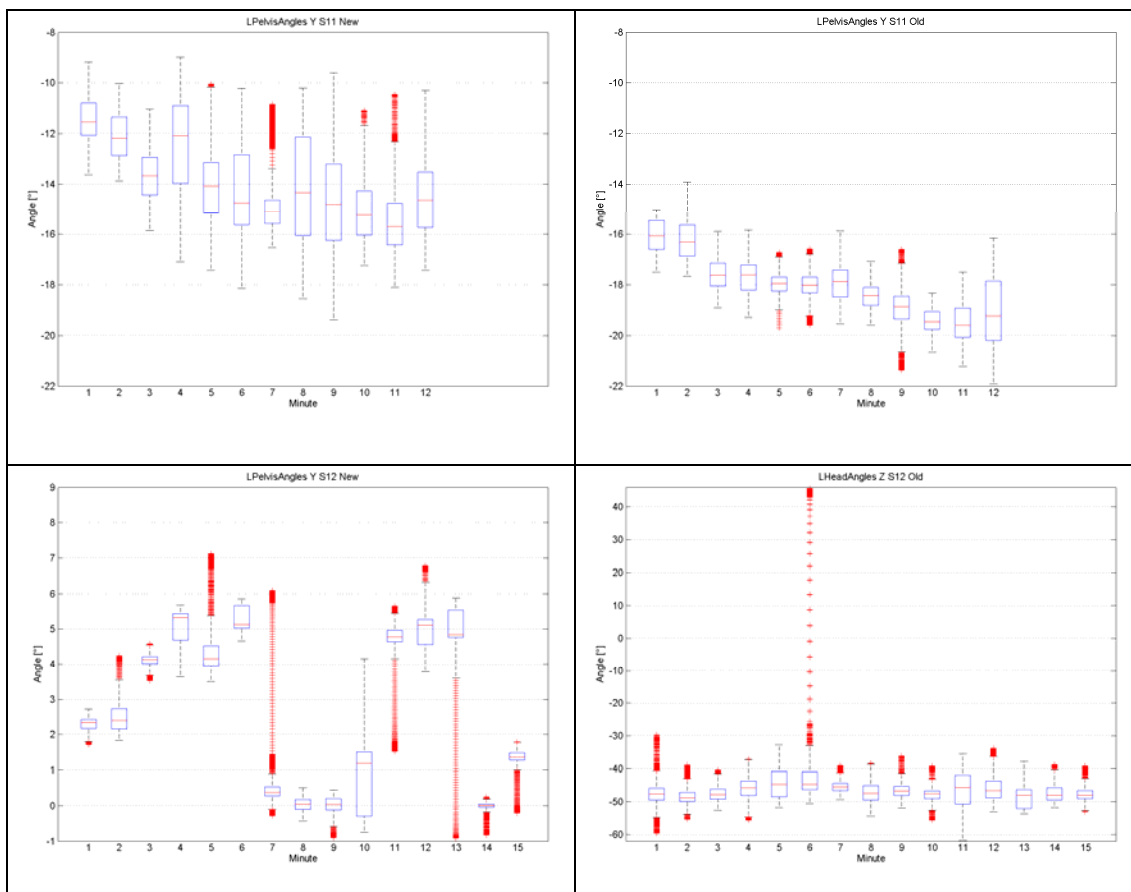
**Pelvic side-flexion (Y-axis)**



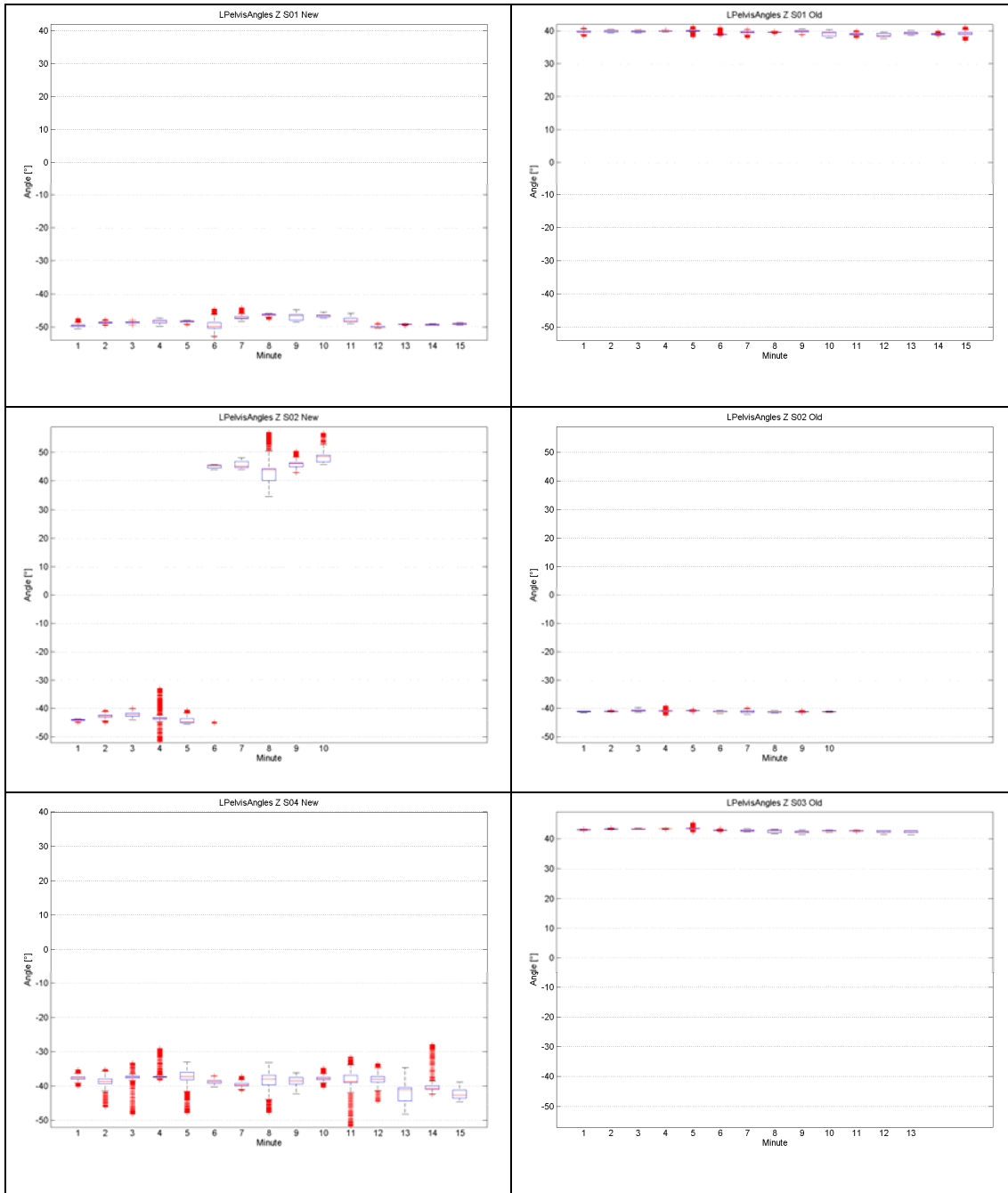


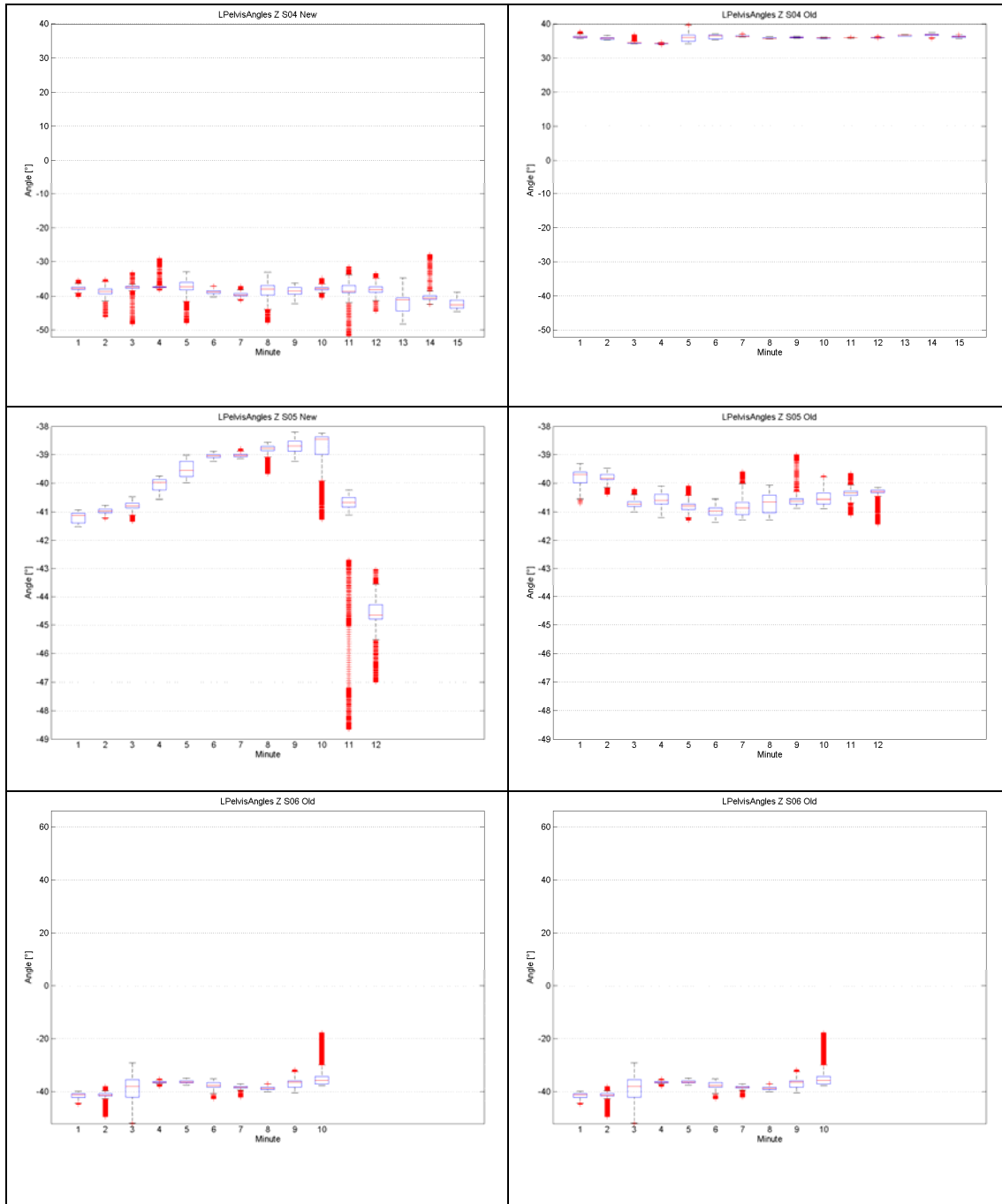


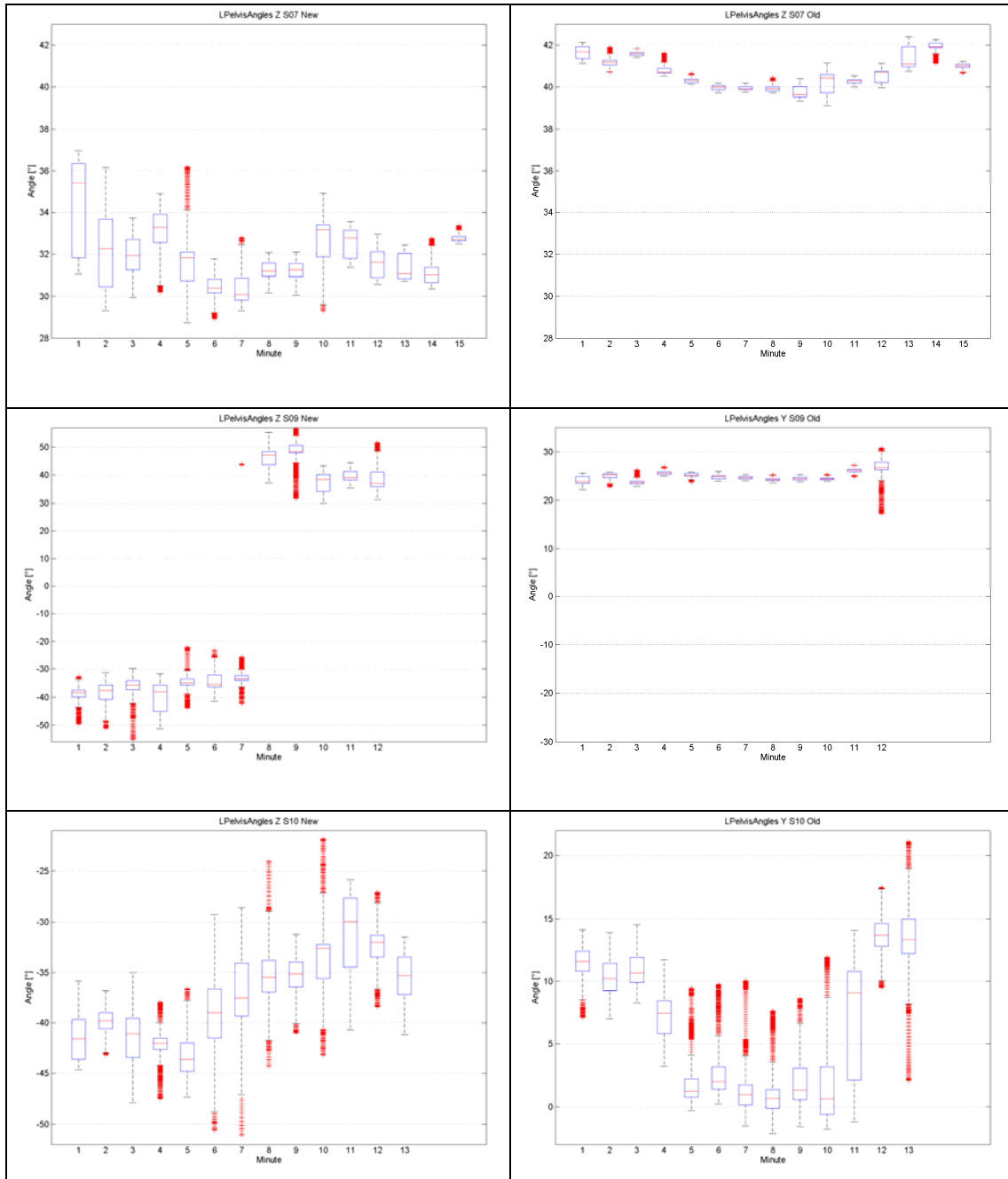


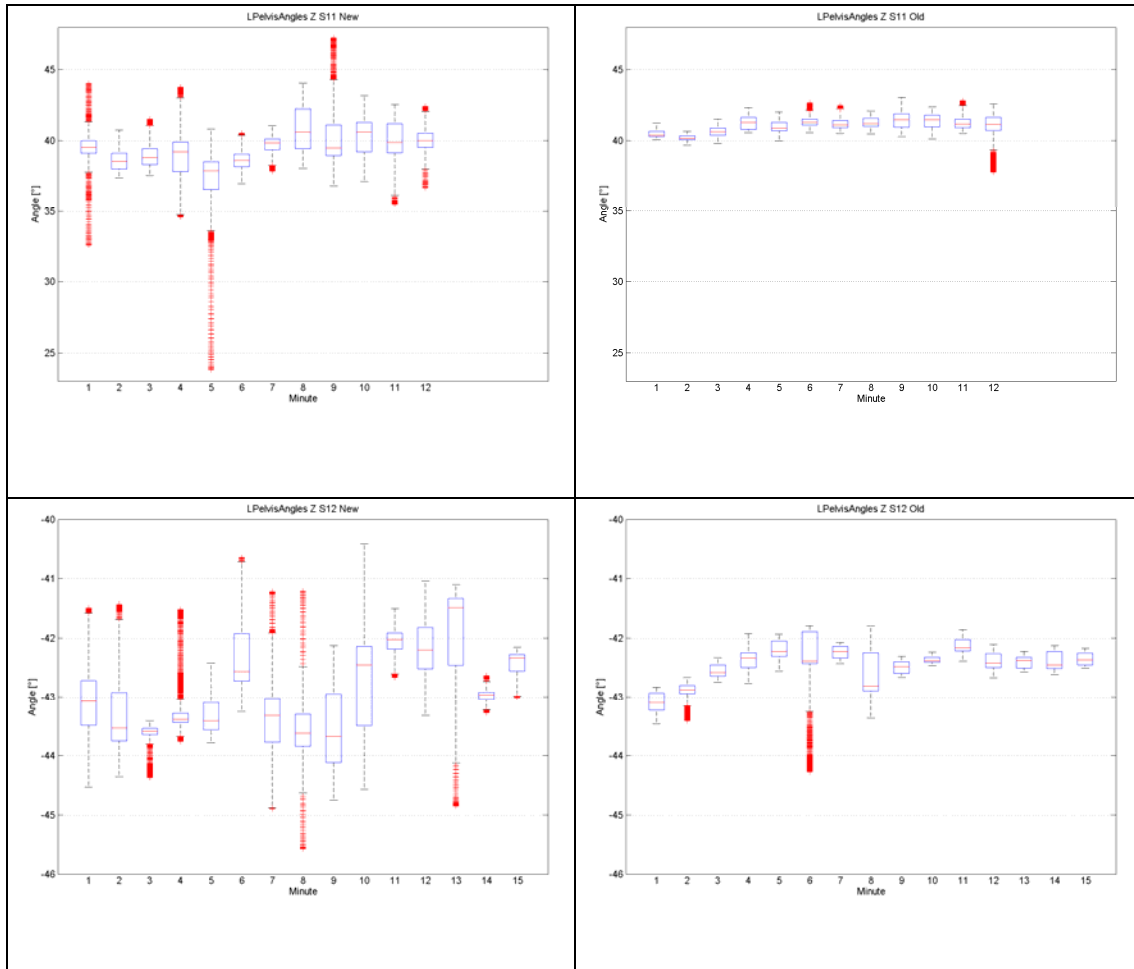


### Pelvic rotation (Z-axis)

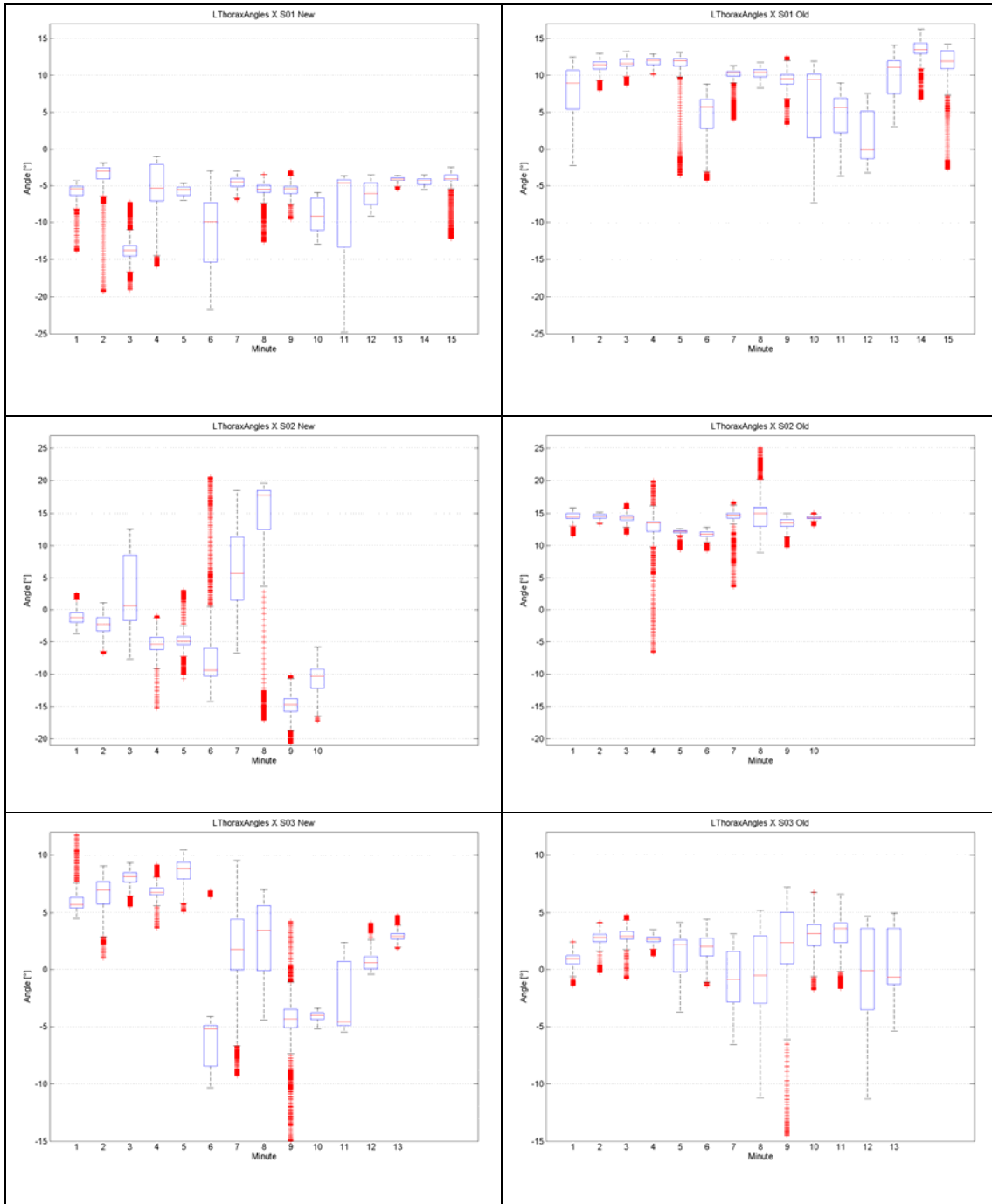




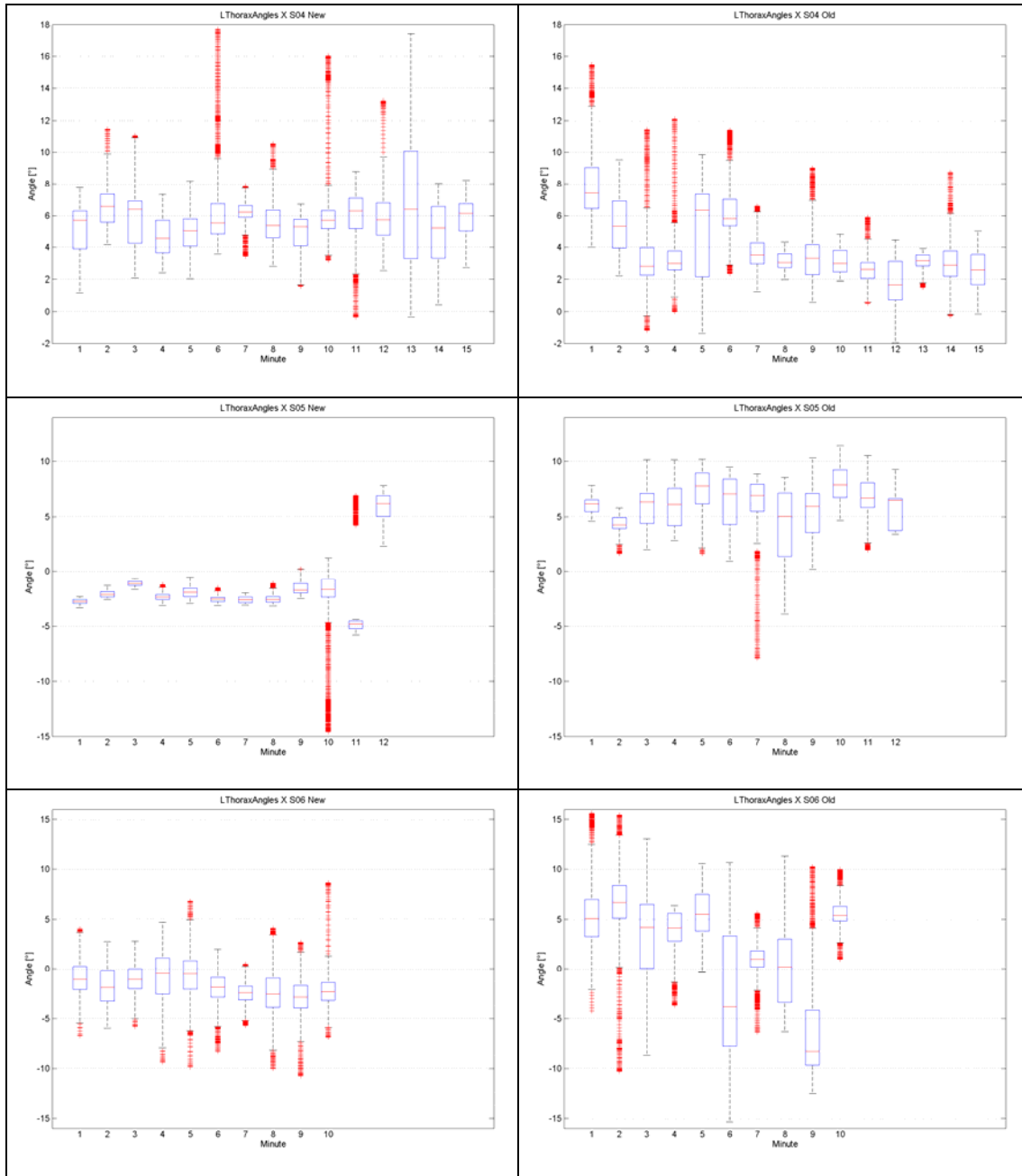


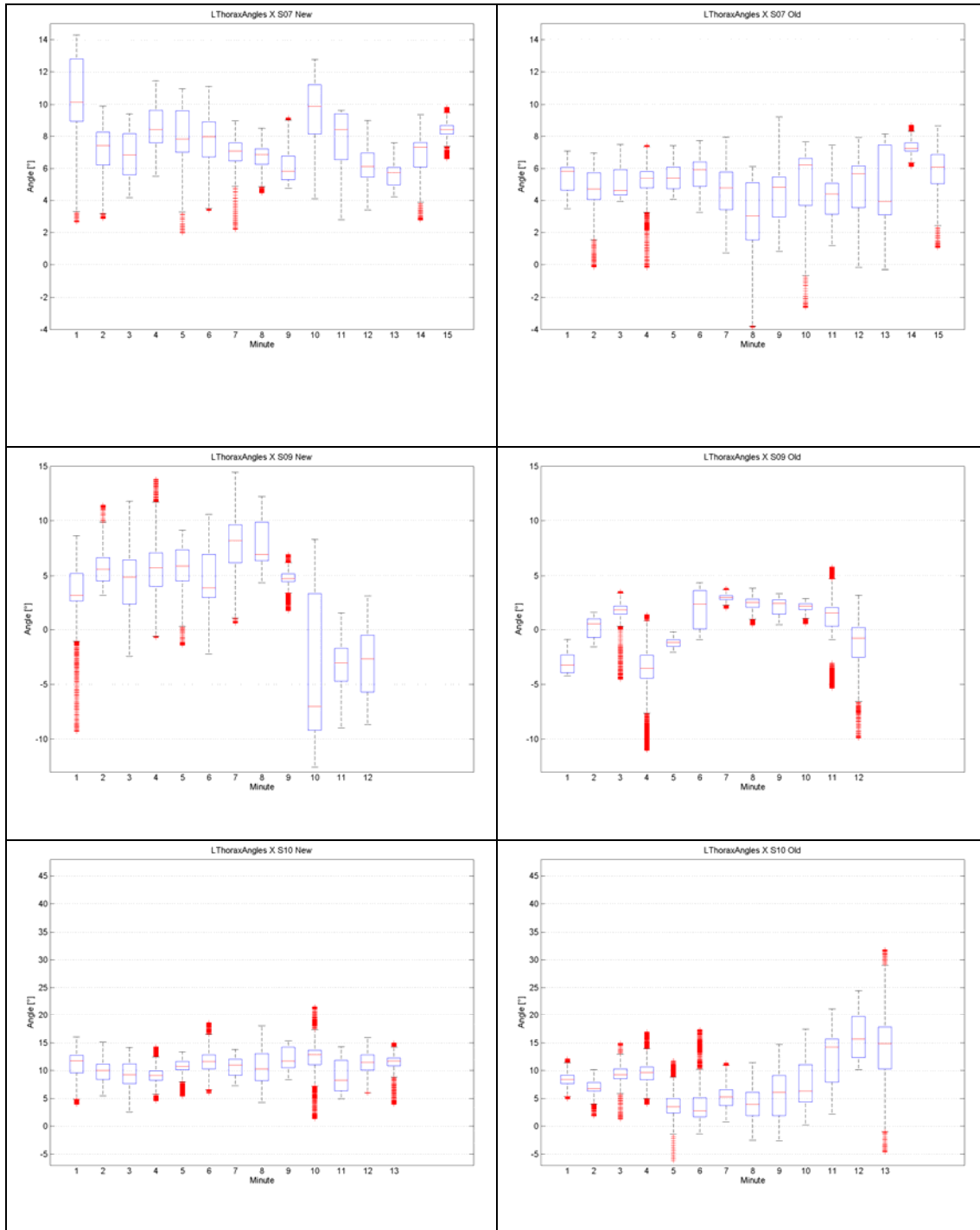


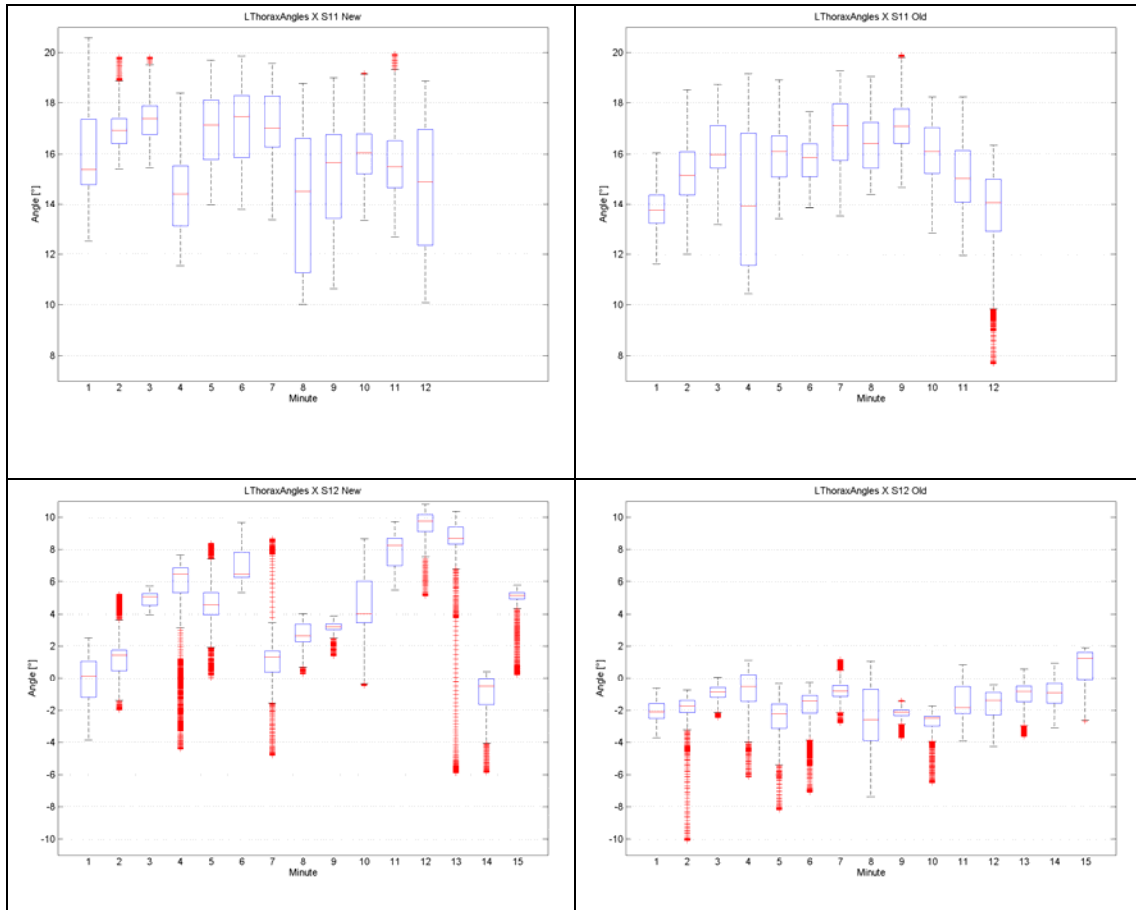
### Thoracic angle X-axis (flexion/extension)



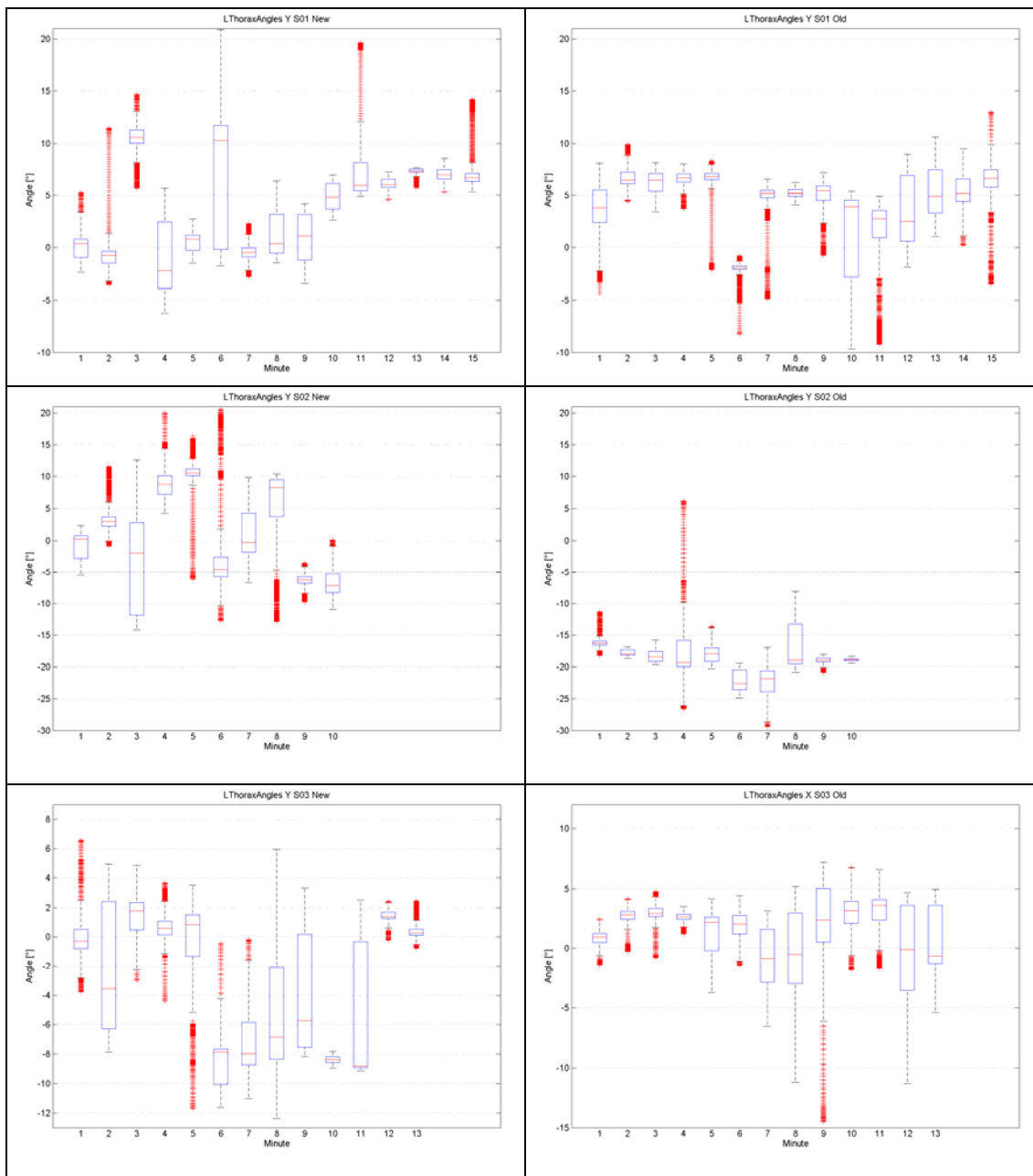


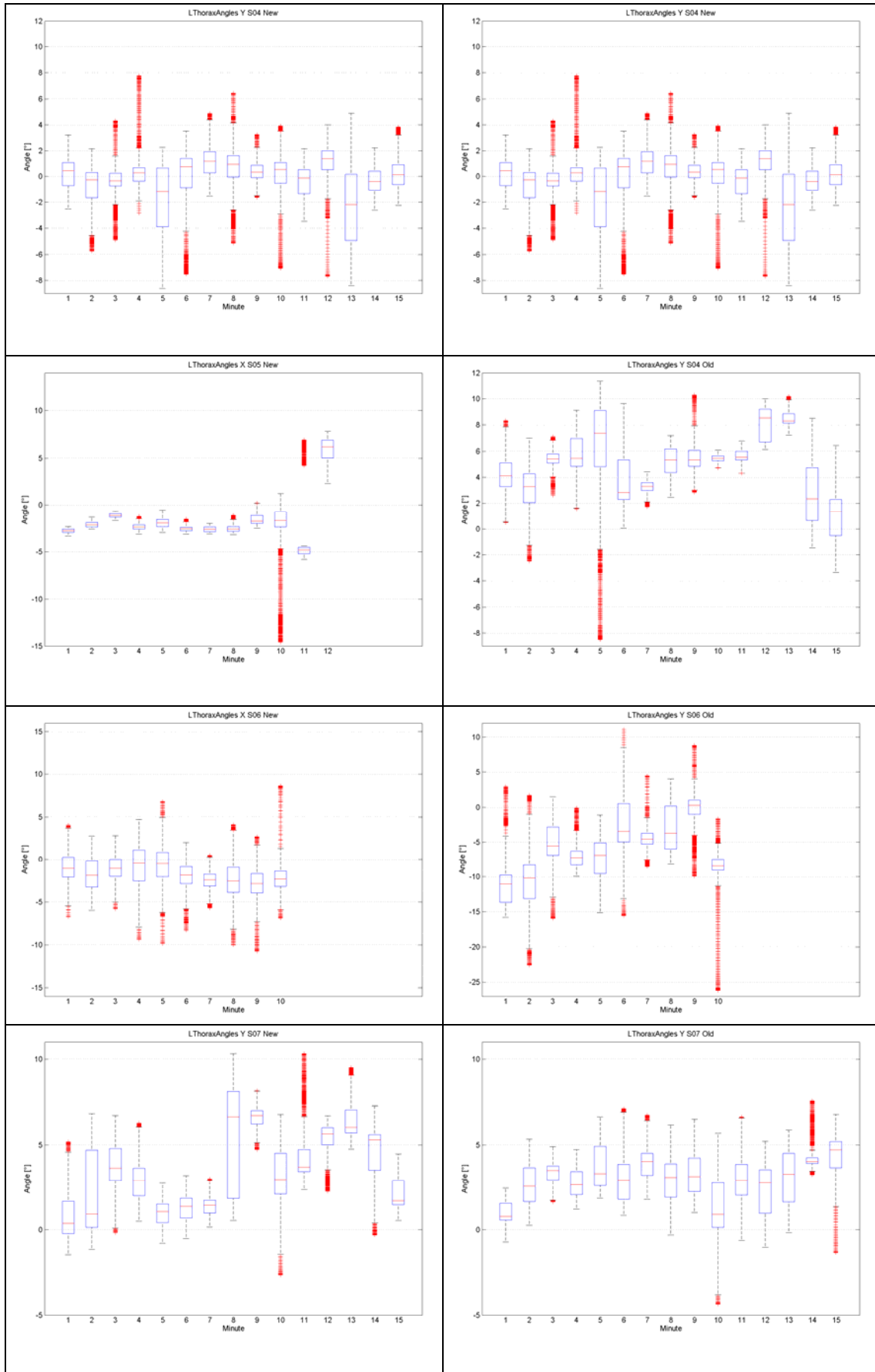


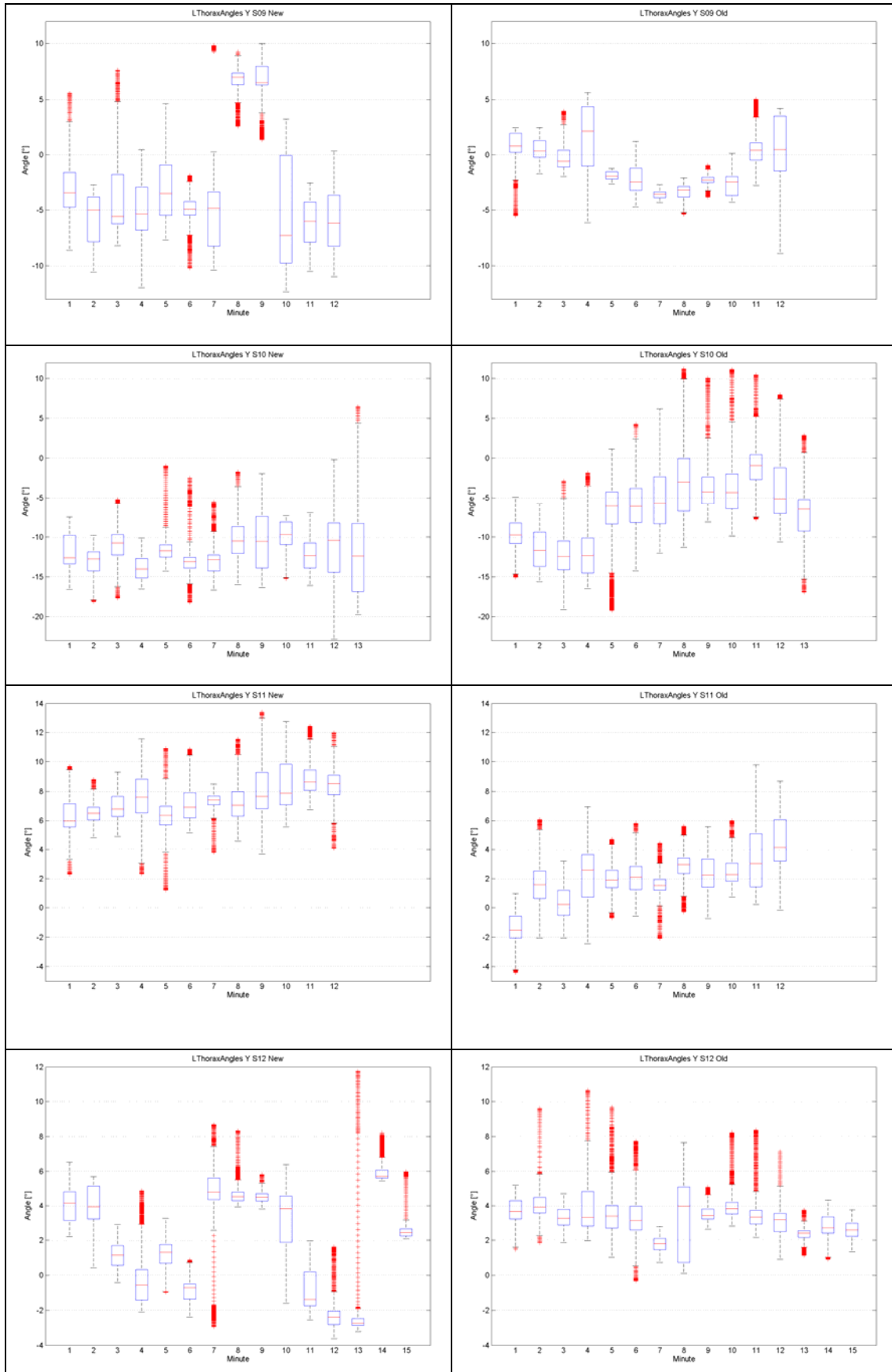




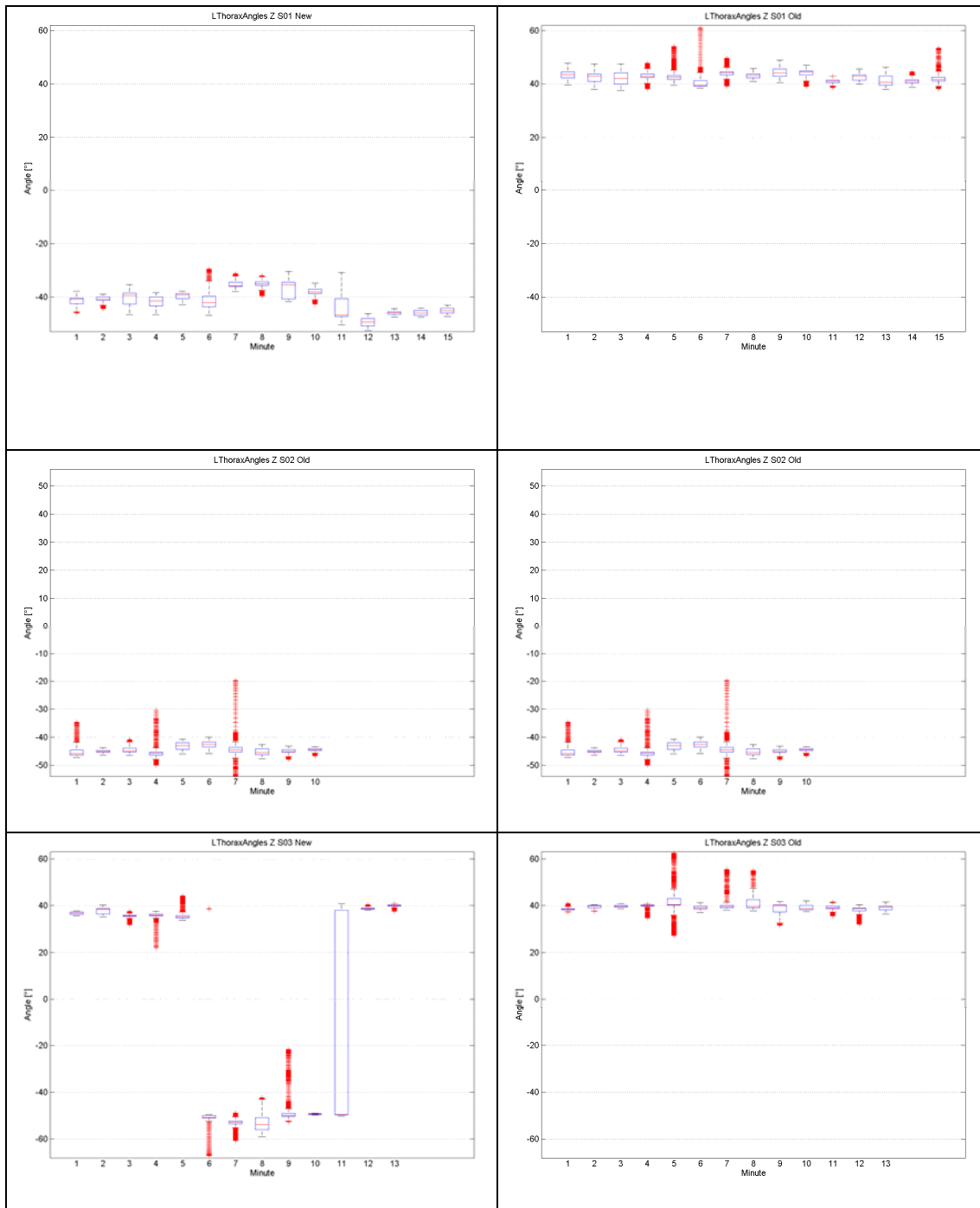
### Thoracic angle side-flexion (Y-axis)

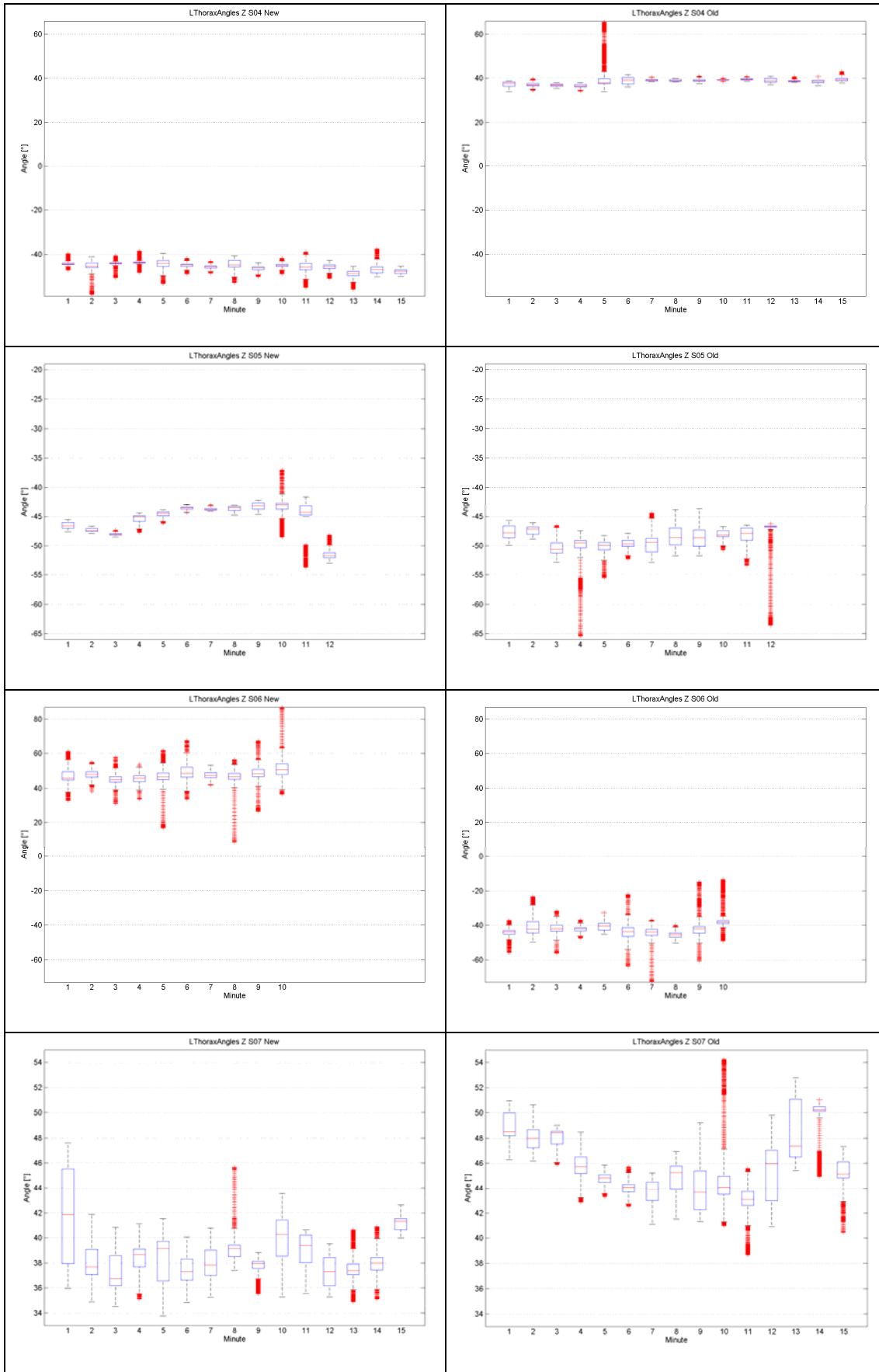




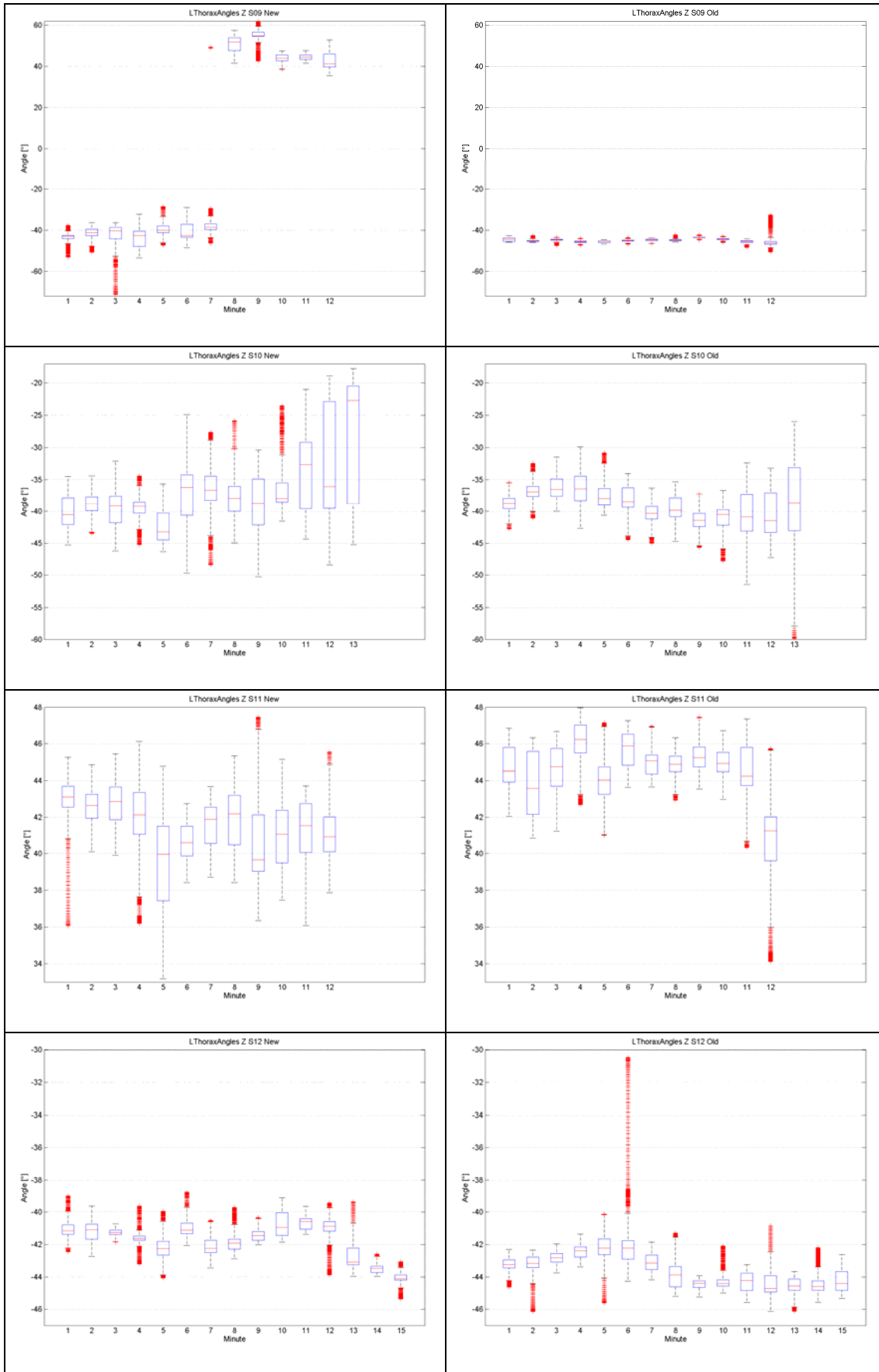


### Thoracic angle rotation (Z-axis)

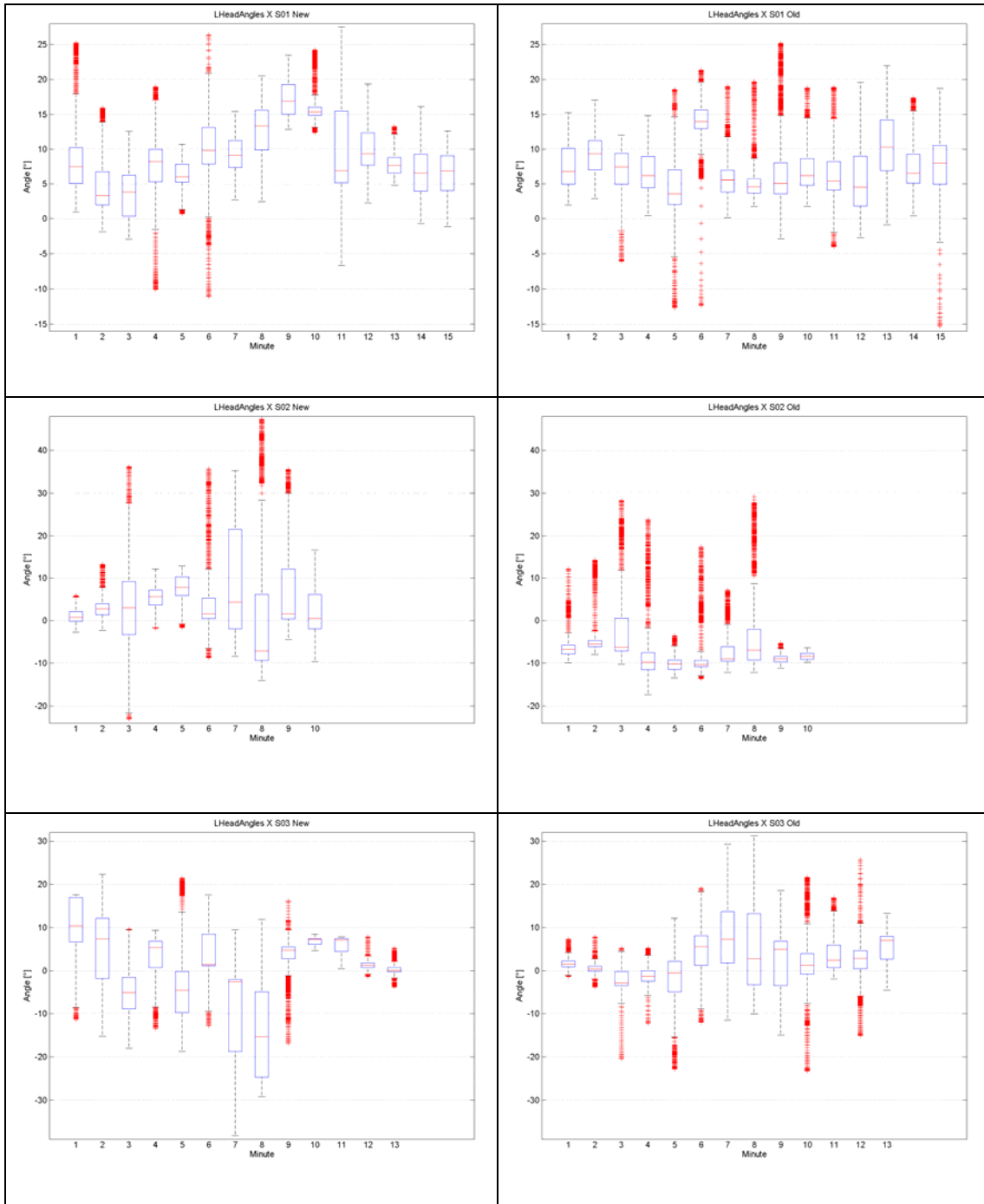


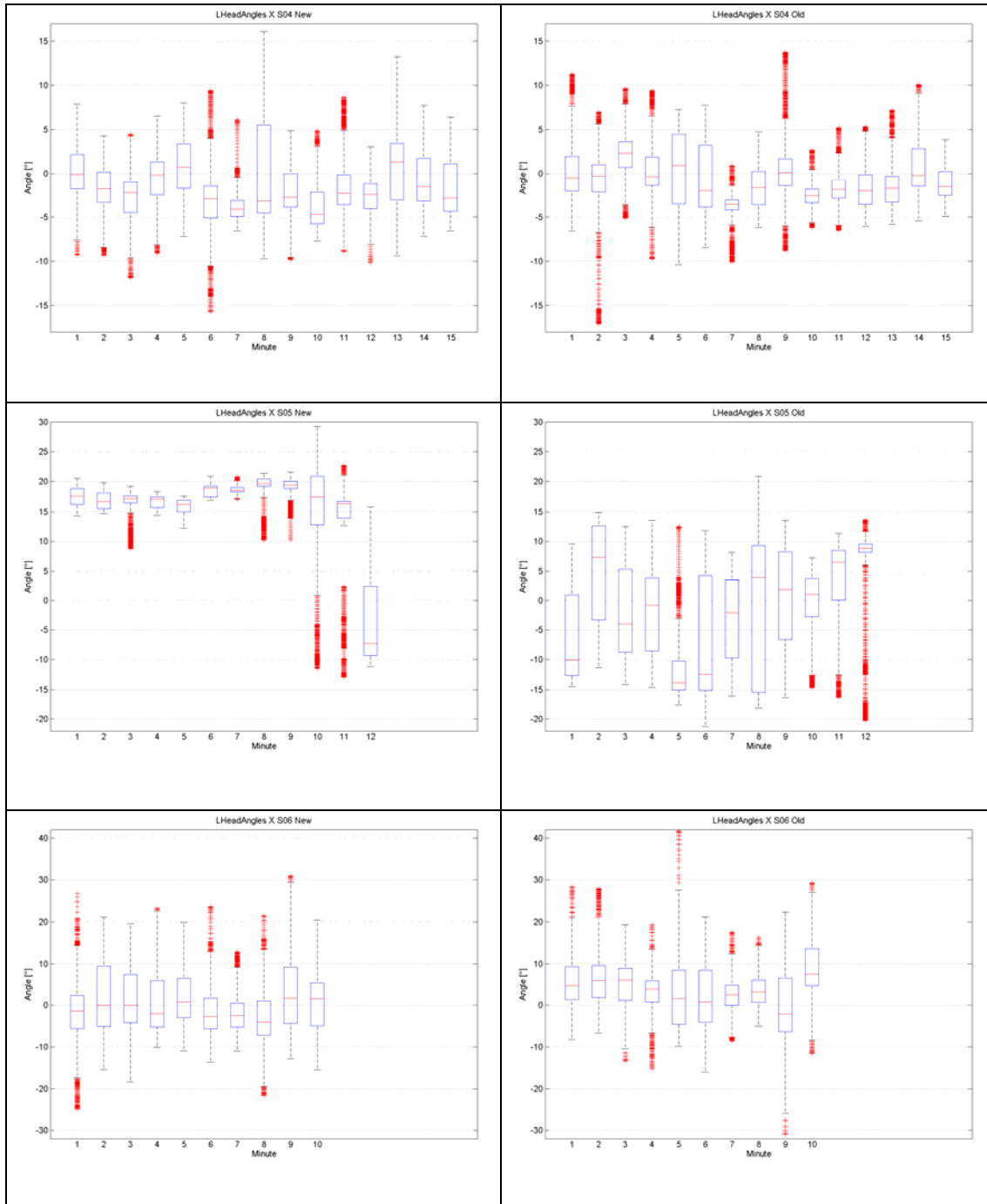


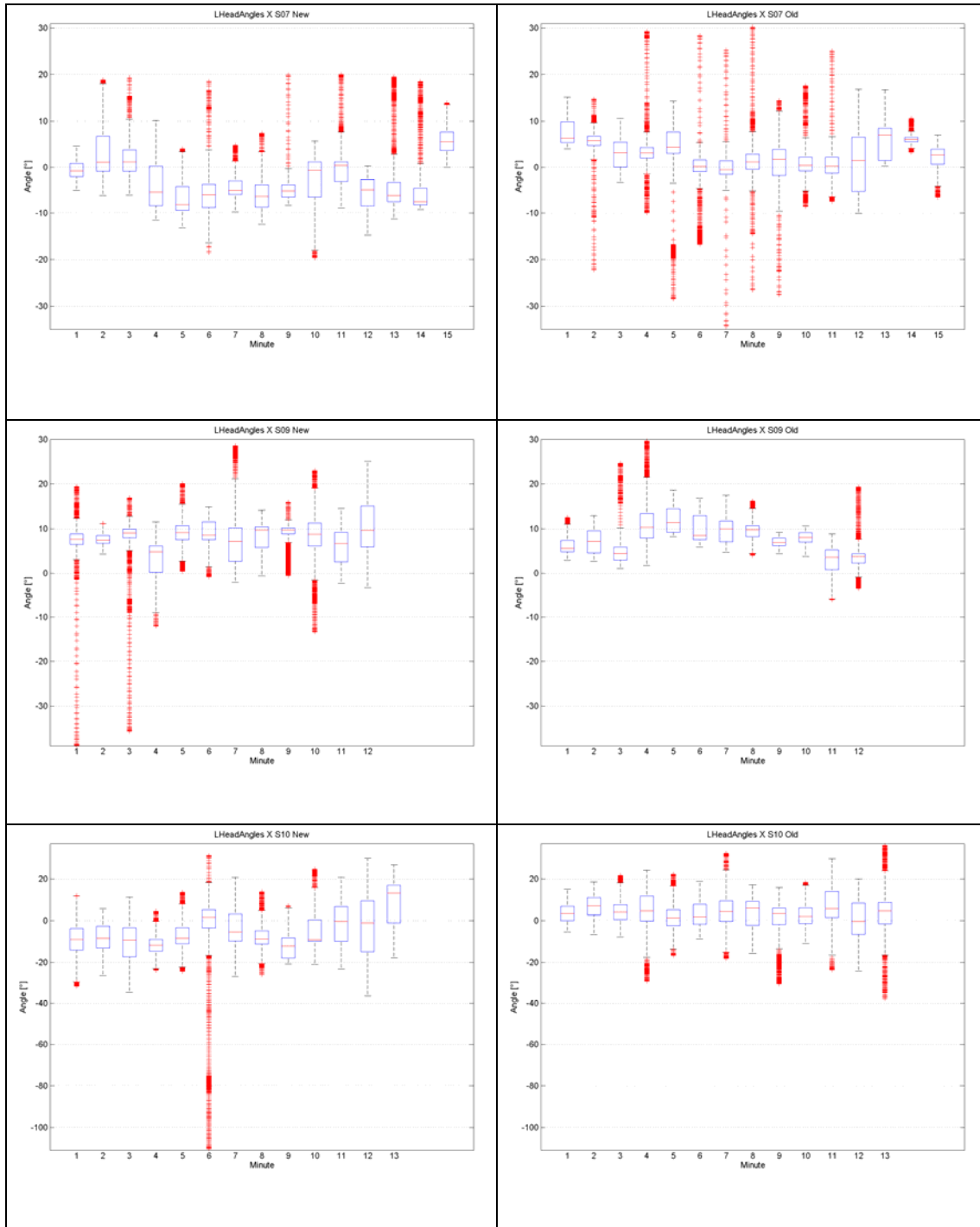


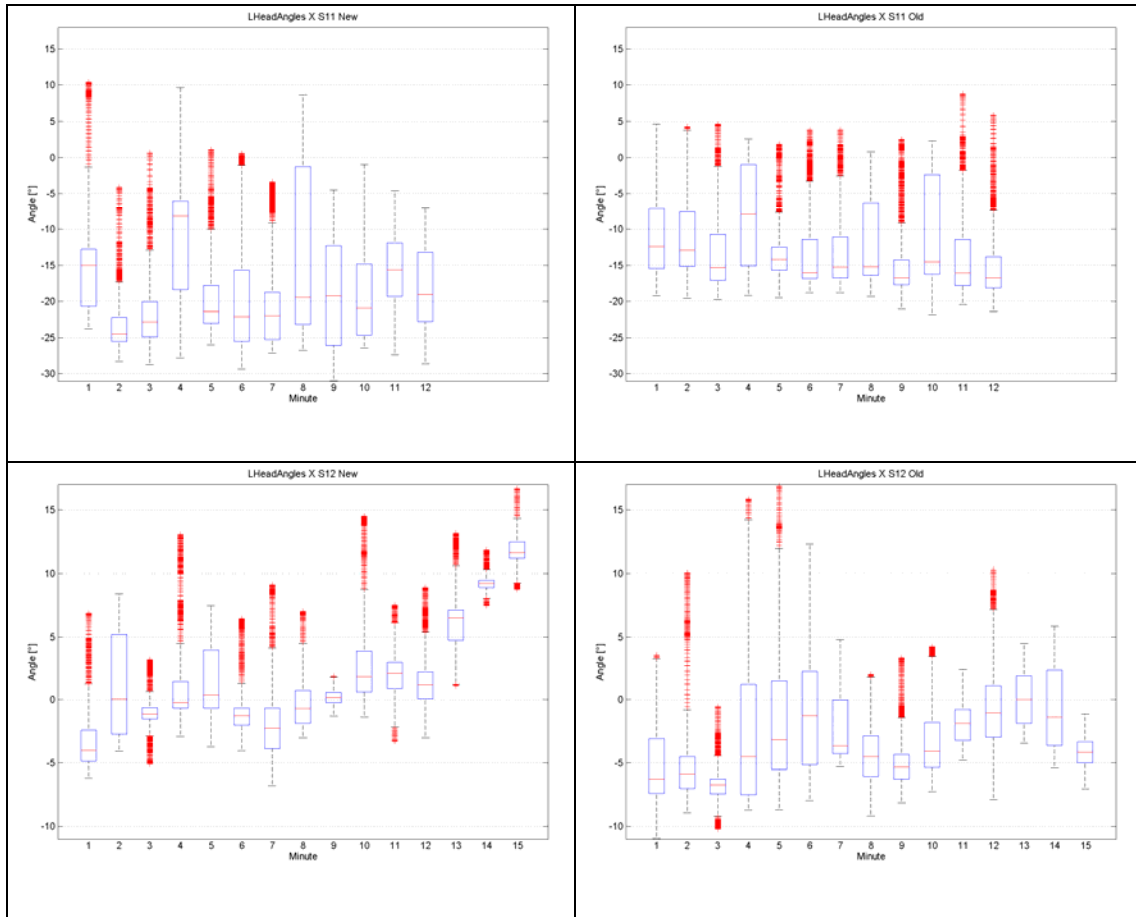


### Head flexion/extension (X-axis)

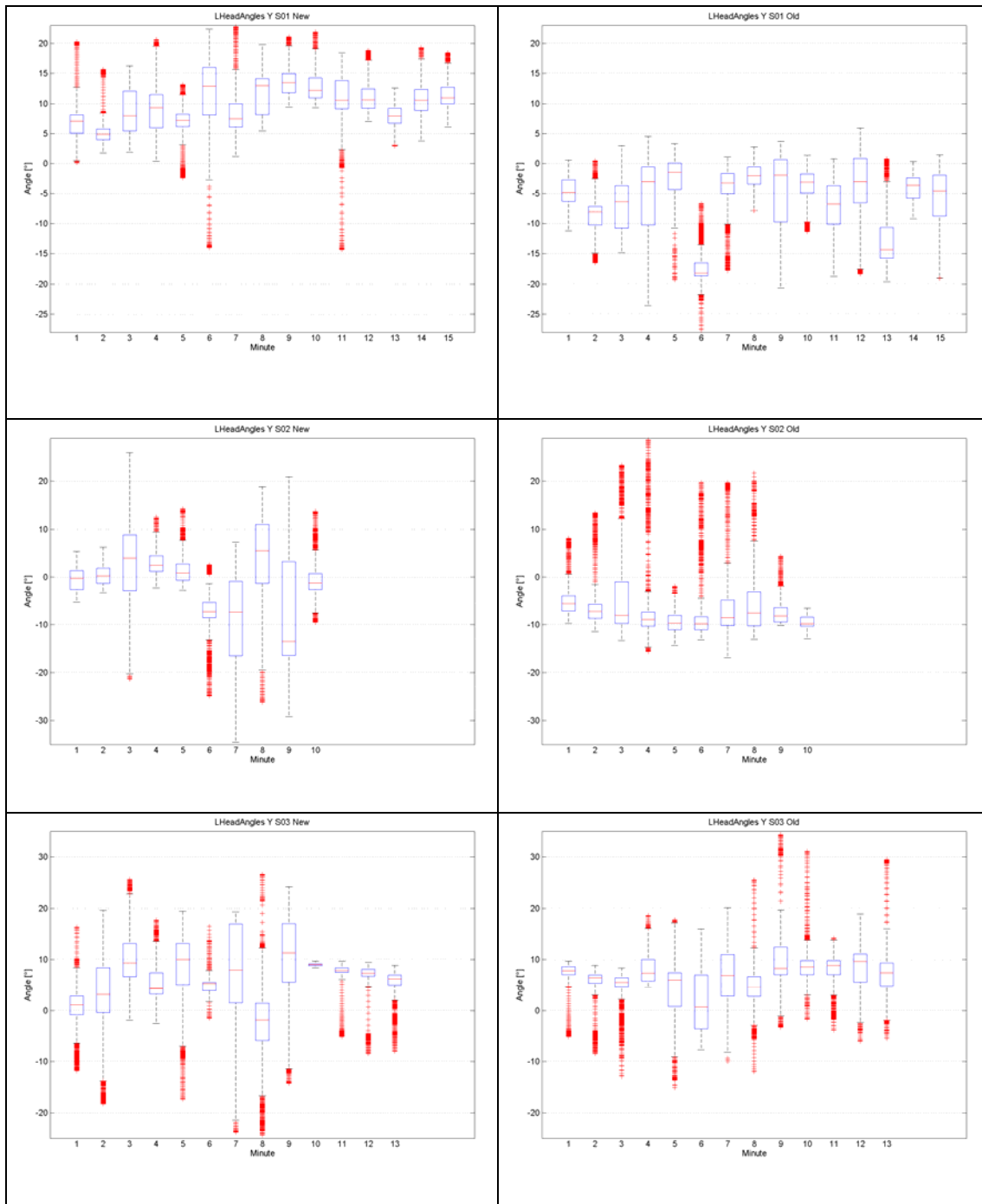


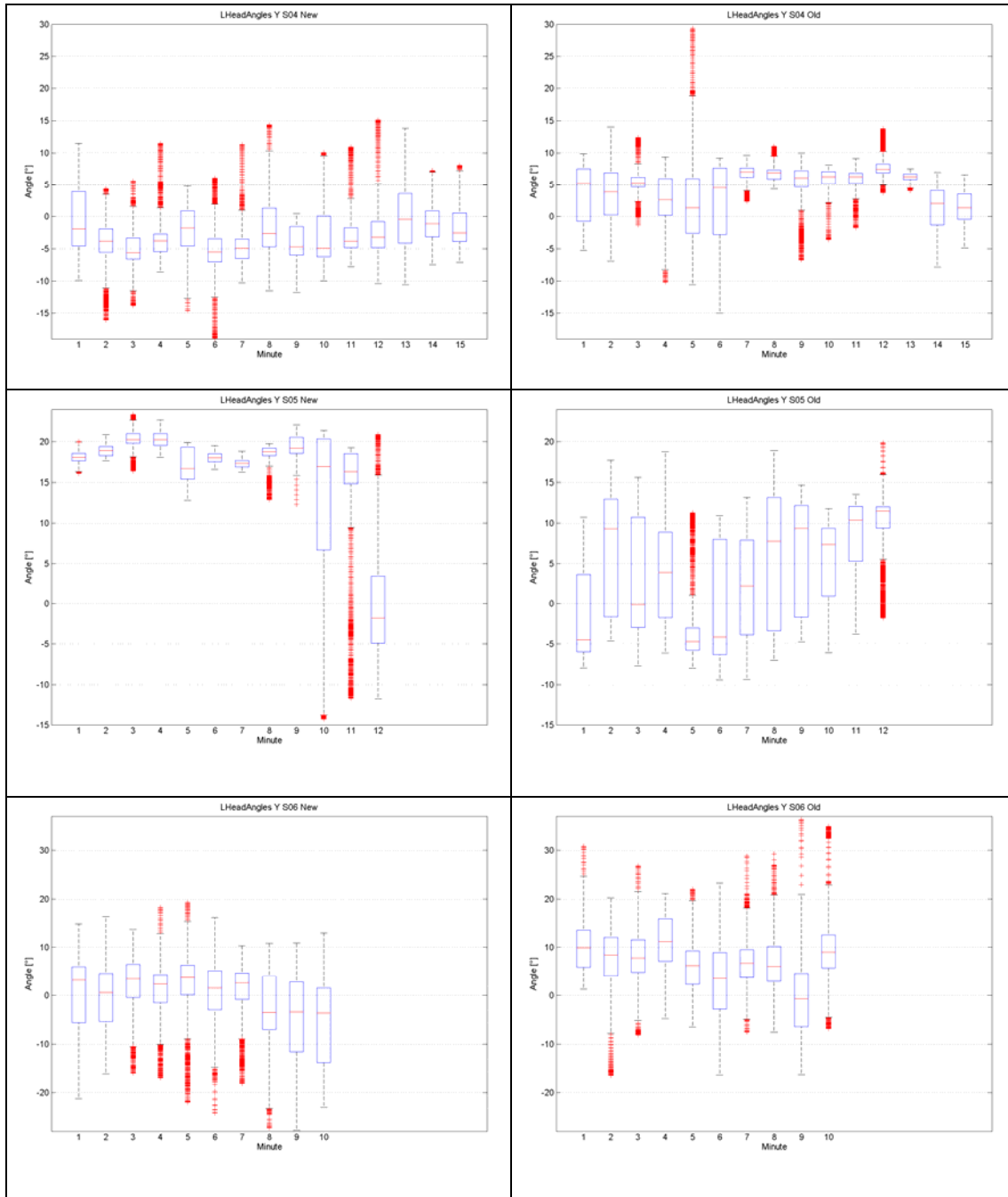


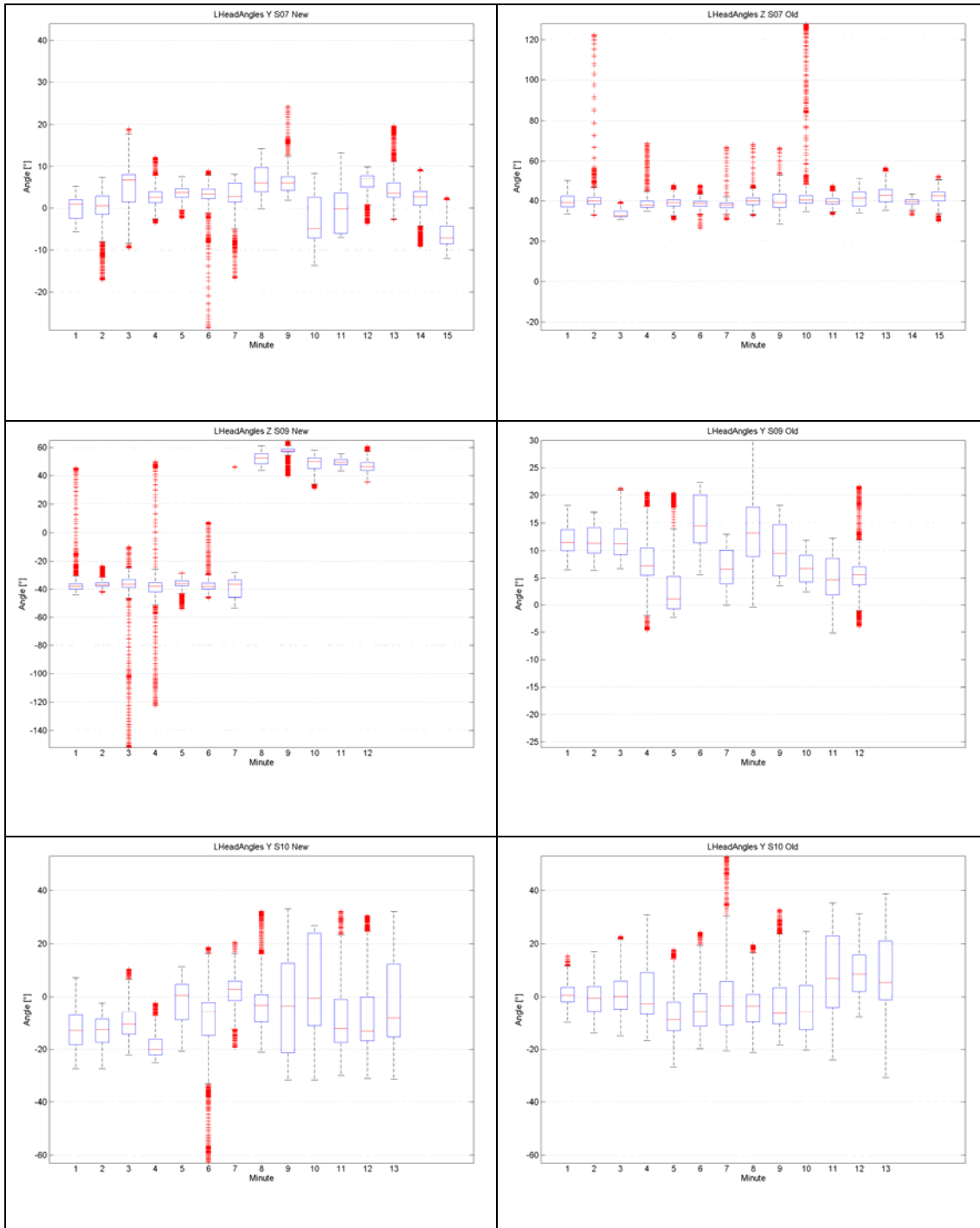




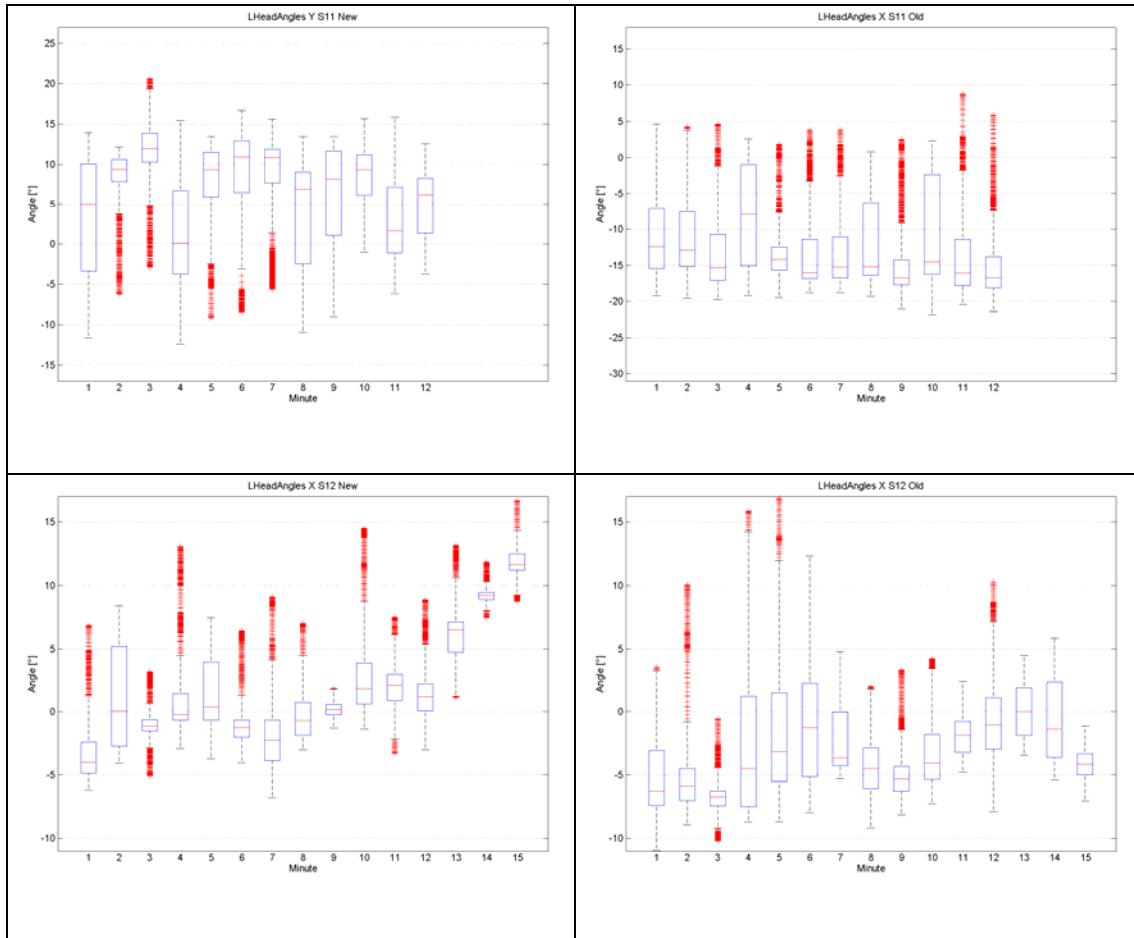
### Head side-flexion (Y-axis)











## Head rotation (Z-axis)

