

## Supplementary material

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The following material accompanies the article

### **Anxiety disorders and age-related changes in physiology**

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## Supplement 1. Case control criteria

We used a transdiagnostic phenotype for lifetime anxiety disorders and identified cases from multiple sources: the MHQ which included the anxiety disorder module of the Composite International Diagnostic Interview Short Form (CIDI-SF) and assessed generalised anxiety disorder according to DSM-5 criteria (Supplement 1)<sup>1</sup>; individuals with a Generalised Anxiety Disorder Assessment (GAD-7) sum score of  $\geq 10$ <sup>2</sup>, which was assessed as part of the MHQ; individuals who had reported “anxiety/panic attacks” during the nurse-led interview at baseline (field 20002), or “anxiety, nerves or generalized anxiety disorder”, “social anxiety or social phobia”, “any other phobia”, “panic attacks” or “agoraphobia” in response to a single-item question on the MHQ (field 20544); participants with a hospital inpatient record containing an ICD-10 code for anxiety disorders (F40-F41; Supplement 2); participants with at least two primary care records containing a Read v2 or CTV3 code for anxiety disorders (for data extraction procedures, see <sup>3</sup>) (Supplement 3). We excluded individuals with any record of bipolar disorder or psychosis, as these disorders are strongly associated with the risk of physical multimorbidity<sup>4,5</sup>.

Healthy controls did not meet our criteria for anxiety disorders and had no record of other mental disorders: (i) had not reported “schizophrenia”, “mania/bipolar disorder/manic depression”, “depression”, “obsessive compulsive disorder”, “anorexia/bulimia/other eating disorder”, “post-traumatic stress disorder” during the nurse-led interview at baseline (field 20002); (ii) reported no mental disorders in response to the single-item question on the MHQ (field 20544); (iii) had self-reported no current psychotropic medication use at baseline (field 20003; Supplement 4)<sup>6</sup>; (iv) had no linked hospital inpatient record that contained any ICD-10 Chapter V code except organic causes or substance use (F20-F99); (v) had no primary care record containing diagnostic codes for mental disorders<sup>3</sup>; (vi) were not classified as individuals with probable mood disorder according to Smith et al.<sup>7</sup> based on additional questions that were introduced during the later stages of the baseline assessment (Supplement 5); (vii) had no Patient Health Questionnaire-9 (PHQ-9) sum score of  $\geq 5$ , which was assessed as part of the MHQ; (viii) had no GAD-7 sum score of  $\geq 5$ ; (ix) did not report that they ever felt worried, tense, or anxious for most of a month or longer (field 20421); (x) were not identified as depression or bipolar disorder cases based on the CIDI-SF depression module and questions on (hypo)manic symptoms<sup>8,9</sup>.

## References

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- 4 Stubbs, B. *et al.* Physical multimorbidity and psychosis: comprehensive cross sectional analysis including 242,952 people across 48 low-and middle-income countries. *BMC Medicine* **14**, 1-12 (2016).
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- 6 Davis, K. A. *et al.* Indicators of mental disorders in UK Biobank—A comparison of approaches. *International Journal of Methods in Psychiatric Research* **28**, e1796 (2019).
- 7 Smith, D. J. *et al.* Prevalence and characteristics of probable major depression and bipolar disorder within UK biobank: cross-sectional study of 172,751 participants. *PloS One* **8**, e75362 (2013).
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- 9 Mutz, J., Young, A. H. & Lewis, C. M. Age-related changes in physiology in individuals with bipolar disorder. *Journal of Affective Disorders*, doi:<https://doi.org/10.1016/j.jad.2021.09.027> (2021).

## Supplement 2. CIDI-SF lifetime generalised anxiety disorder criteria

**Supplement table 1.** Case definition lifetime generalised anxiety disorder

	Definition and UK Biobank data fields
<p><b>Lifetime generalised anxiety disorder (case):</b> Excessive anxiety or worry about a number of issues, occurring most days for at least six months, finding it difficult to control the worry, with three or more somatic symptoms, and functional impairment.</p> <p>No record of psychosis or bipolar disorder.</p>	<p>“Ever felt worried, tense, or anxious for most of a month or longer” (20421) = Yes AND “Longest period spent worried or anxious” (20420) ≥ 6 months or All my life AND “Worried most days during period of worst anxiety” (20538) = Yes AND  (“Ever worried more than most people would in similar situation” (20425) = Yes OR “Stronger worrying (than other people) during period of worst anxiety” (20542) = Yes) AND  (“Number of things worried about during worst period of anxiety” (20543) = More than one thing OR “Multiple worries during worst period of anxiety” (20540) = Yes) AND  (“Difficulty stopping worrying during worst period of anxiety” (20541) = Yes OR “Frequency of inability to stop worrying during worst period of anxiety” (20539) = Often OR  “Frequency of difficulty controlling worry during worst period of anxiety” (20537) = Often) AND  “Impact on normal roles during worst period of anxiety” (20418) = Somewhat or A lot AND  Three or more somatic symptoms endorsed from: (1) “Restless during period of worst anxiety” (20426), (2) “Keyed up or on edge during worst period of anxiety” (20423), (3) “Easily tired during worst period of anxiety” (20429), (4) “Difficulty concentrating during worst period of anxiety” (20419), (5) “More irritable than usual during worst period of anxiety” (20422), (6) “Tense, sore, or aching muscles during worst period of anxiety” (20417), (7) “Frequent trouble falling or staying asleep during worst period of anxiety” (20427). AND  <b>No</b> self-reported psychosis or mania for “Mental health problems ever diagnosed by a professional” (20544) AND  <b>No</b> self-reported mania/bipolar disorder/manic depression or schizophrenia for “Non-cancer illness” (20002) AND  <b>No</b> ICD-10 code for “manic episode” or “bipolar affective disorder” (F30-F31) or “schizophrenia, schizotypal and delusional disorders” (F20-F29) AND  <b>No</b> probable bipolar disorder (20126) according to Smith et al. (2013) AND  <b>No</b> bipolar disorder record according to the MHQ AND  <b>No</b> primary care record of bipolar disorder or psychosis</p>
<p><i>Note:</i> Criteria for lifetime generalised anxiety disorder adapted from Davis et al. (2020), doi: 10.1192/bjo.2019.100. CIDI-SF = Composite International Diagnostic Interview Short Form; ICD-10 = International Classification of Diseases, Tenth Revision; MHQ = mental health questionnaire.</p>	

### **Supplement 3. ICD-10 codes for anxiety disorders**

#### **Phobic anxiety disorders**

- F40.0 Agoraphobia
- F40.1 Social phobias
- F40.2 Specific (isolated) phobias
- F40.8 Other phobic anxiety disorders
- F40.9 Phobic anxiety disorder, unspecified

#### **Other anxiety disorders**

- F41.0 Panic disorder [episodic paroxysmal anxiety]
- F41.1 Generalised anxiety disorder
- F41.2 Mixed anxiety and depressive disorder
- F41.3 Other mixed anxiety disorders
- F41.8 Other specified anxiety disorders
- F41.9 Anxiety disorder, unspecified

## Supplement 4. Primary care codes for anxiety disorders

**Supplement table 2.** Primary care record codes

Clinical code	Diagnostic version	Code description
146G.	Read_v3	H/O: agoraphobia
1Bb..	Read_v2	Specific fear
1Bb0.	Read_v2	Fear of falling
1Bb1.	Read_v2	Fear of getting cancer
E200.	Read_v3	Anxiety disorder
E200.	Read_v2	Anxiety states
E2000	Read_v3	Anxiety state unspecified
E2000	Read_v2	Anxiety state unspecified
E2001	Read_v3	(Panic disorder) or (panic attack)
E2001	Read_v2	Panic disorder
E2002	Read_v3	Generalised anxiety disorder
E2002	Read_v2	Generalised anxiety disorder
E2004	Read_v3	Chronic anxiety
E2004	Read_v2	Chronic anxiety
E2005	Read_v3	Recurrent anxiety
E2005	Read_v2	Recurrent anxiety
E200z	Read_v3	Anxiety state NOS
E200z	Read_v2	Anxiety state NOS
E202.	Read_v3	Phobic disorders (& [social] or [phobic anxiety])
E202.	Read_v2	Phobic disorders
E2020	Read_v3	Phobia unspecified
E2020	Read_v2	Phobia unspecified
E2021	Read_v3	Agoraphobia with panic attacks
E2021	Read_v2	Agoraphobia with panic attacks
E2022	Read_v3	Agoraphobia without mention of panic attacks
E2022	Read_v2	Agoraphobia without mention of panic attacks
E2023	Read_v3	Social phobia, fear of eating in public
E2023	Read_v2	Social phobia, fear of eating in public
E2024	Read_v3	Social phobia, fear of public speaking
E2024	Read_v2	Social phobia, fear of public speaking
E2025	Read_v3	Social phobia, fear of public washing
E2025	Read_v2	Social phobia, fear of public washing
E2026	Read_v3	Acrophobia
E2026	Read_v2	Acrophobia
E2027	Read_v3	Animal phobia
E2027	Read_v2	Animal phobia
E2028	Read_v3	Claustrophobia
E2028	Read_v2	Claustrophobia
E2029	Read_v3	Fear of crowds
E2029	Read_v2	Fear of crowds
E202A	Read_v3	Fear of flying
E202A	Read_v2	Fear of flying
E202B	Read_v3	Cancer phobia
E202B	Read_v2	Cancer phobia
E202C	Read_v3	Dental phobia
E202C	Read_v2	Dental phobia
E202D	Read_v3	Fear of death
E202D	Read_v2	Fear of death
E202E	Read_v3	Fear of pregnancy
E202E	Read_v2	Fear of pregnancy
E202z	Read_v3	(Weight fixation) or (phobic disorder NOS)
E202z	Read_v2	Phobic disorder NOS
E28z.	Read_v3	(Examination fear) or (flying phobia) or (stage fright) or (acute stress reaction NOS)
Eu40.	Read_v3	[X]Phobic anxiety disorders
Eu40.	Read_v2	[X]Phobic anxiety disorders
Eu400	Read_v3	[X] Agoraphobia (& [without history of panic disorder] or [with panic disorder])
Eu400	Read_v2	[X]Agoraphobia
Eu401	Read_v3	Social phobia
Eu401	Read_v2	[X]Social phobias
Eu402	Read_v3	[X] Specific (isolated) phobias (& [acrophobia] or [animal] or [claustrophobia] or [simple phobia])
Eu402	Read_v2	[X]Specific (isolated) phobias
Eu403	Read_v3	Needle phobia
Eu403	Read_v2	[X]Needle phobia
Eu40y	Read_v2	[X]Other phobic anxiety disorders
Eu40z	Read_v3	[X]Phobic anxiety disorder, unspecified
Eu40z	Read_v2	[X]Phobic anxiety disorder, unspecified
Eu41.	Read_v3	[X]Other anxiety disorders
Eu41.	Read_v2	[X]Other anxiety disorders
Eu410	Read_v3	[X]Panic disorder [episodic paroxysmal anxiety]
Eu410	Read_v2	[X]Panic disorder [episodic paroxysmal anxiety]

Eu411	Read_v3	Anxiety neurosis
Eu411	Read_v2	[X]Generalized anxiety disorder
Eu413	Read_v3	[X]Other mixed anxiety disorders
Eu413	Read_v2	[X]Other mixed anxiety disorders
Eu41y	Read_v3	[X] Anxiety disorders: [other specified] or [anxiety hysteria]
Eu41y	Read_v2	[X]Other specified anxiety disorders
Eu41z	Read_v3	[X]Anxiety disorder, unspecified
Eu41z	Read_v2	[X]Anxiety disorder, unspecified
Ua1qa	Read_v3	Fear of dentist
Ua1qc	Read_v3	Fear of not coping with treatment
Ua1qd	Read_v3	Fear of lifts
Ua1qe	Read_v3	Fear of thunderstorm
Ua1qS	Read_v3	Panic attack
Ua1qs	Read_v3	Fear of wetting self in public
Ua1qt	Read_v3	Fear of losing control of bowels in public
Ua1qU	Read_v3	Fear of walking
Ua1qV	Read_v3	Fear of mobilising
Ua1qW	Read_v3	Fear of disconnection from ventilator
Ua1qX	Read_v3	Fear of being left alone during period of dependence
Ua1qY	Read_v3	Fear of being left alone
X00Sr	Read_v3	Erythrophobia
X00SV	Read_v3	Agoraphobia
X00SW	Read_v3	Social phobia
X00SX	Read_v3	Specific phobia
X00SY	Read_v3	Needle phobia
X00Sy	Read_v3	Weight fixation
X50G2	Read_v3	Trichophobia
X50G3	Read_v3	Parasitophobia
X50G5	Read_v3	Venereophobia
X50G6	Read_v3	Syphilophobia
X50GI	Read_v3	Bromisodrophobia
X761a	Read_v3	Fear of swallowing
X761b	Read_v3	Fear of collapsing
X761c	Read_v3	Fear of fainting
X761d	Read_v3	Fear of having a heart attack
X761e	Read_v3	Fear of shaking
X761f	Read_v3	Fear of sweating
X761G	Read_v3	Loss of hope for the future
X761g	Read_v3	Fear of dying
X761h	Read_v3	Fear of going crazy
X761i	Read_v3	Fear of losing emotional control
X761j	Read_v3	Fear of becoming fat
X761k	Read_v3	Anxiety about behaviour or performance
X761l	Read_v3	Fear of appearing ridiculous
X761m	Read_v3	Fear of saying the wrong thing
X761n	Read_v3	Fear of going out
X761p	Read_v3	Fear of empty streets
X761q	Read_v3	Fear of open spaces
X761r	Read_v3	Fear of crossing streets
X761R	Read_v3	Situation avoidance behaviour
X761t	Read_v3	Fear of transport
X761T	Read_v3	Anxiety about body function or health
X761U	Read_v3	Fear of losing control of bowels
X761u	Read_v3	Social fear
X761v	Read_v3	Fear of activities in public
X761V	Read_v3	Fear of wetting self
X761w	Read_v3	Fear of eating in public
X761W	Read_v3	Fear of vomiting in public
X761x	Read_v3	Fear of public speaking
X761X	Read_v3	Fear of having a fit
X761y	Read_v3	Fear of using public toilets
X761Y	Read_v3	Fear of choking
X761z	Read_v3	Fear of writing in public
X761Z	Read_v3	Anxiety about blushing
X7620	Read_v3	Fear of social group activities
X7621	Read_v3	Fear of being in a small group
X7622	Read_v3	Fear of social gatherings
X7623	Read_v3	Fear of speaking on the phone
X7624	Read_v3	Fear of speaking to people in authority
X7625	Read_v3	Fear of being laughed at
X7626	Read_v3	Fear of being watched
X7627	Read_v3	Specific fear
X7628	Read_v3	Fear of natural phenomena
X7629	Read_v3	Fear of the dark
X762a	Read_v3	Fear of ghosts

X762A	Read_v3	Fear of animals
X762b	Read_v3	Fear of school
X762B	Read_v3	Fear of feathers
X762C	Read_v3	Fear of enclosed spaces
X762E	Read_v3	Fear of tunnels
X762F	Read_v3	Fear of phone boxes
X762G	Read_v3	Fear of flying
X762H	Read_v3	Flying phobia
X762I	Read_v3	Fear associated with illness and body function
X762J	Read_v3	Fear of anaesthetic
X762K	Read_v3	Fear of general anaesthetic
X762L	Read_v3	Fear of awareness under general anaesthetic
X762M	Read_v3	Fear of not waking from general anaesthetic
X762N	Read_v3	Fear of local anaesthetic
X762O	Read_v3	Fear of problem after anaesthetic
X762P	Read_v3	Fear of needles
X762R	Read_v3	Fear of surgical masks
X762S	Read_v3	Fear of hospitals
X762T	Read_v3	Fear of death
X762U	Read_v3	Fear of contracting disease
X762V	Read_v3	Fear of infection
X762W	Read_v3	Fear of contracting venereal disease
X762X	Read_v3	Fear of contracting HIV infection
X762Y	Read_v3	Fear of contracting radiation sickness
X762Z	Read_v3	Fear of the bogey man
Xa00r	Read_v3	Fear of heights
Xa00s	Read_v3	Fear of water
Xa1a8	Read_v3	Examination phobia
Xa1Ev	Read_v3	Fear of needles
Xa3Vk	Read_v3	Fear of insects
Xa3Vl	Read_v3	Fear of birds
Xa3Wl	Read_v3	Fear of blood
Xa3WJ	Read_v3	Fear of getting cancer
Xa7lj	Read_v3	Cancer phobia
XaB96	Read_v3	Other phobias
XaEKL	Read_v3	Phonophobia
Xalvf	Read_v3	Fear of falling
XaK2c	Read_v3	H/O: agoraphobia
XE1aW	Read_v3	(Anxiety state (& [states] or [panic attack])) or (pseudocyesis)
XE1Y7	Read_v3	Panic disorder
XE1YA	Read_v3	Phobic anxiety disorder
XE1YB	Read_v3	Phobic disorder NOS
XE1Zj	Read_v3	[X]Other specified anxiety

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Note: Clinical codes from Fabbri et al. (2021), doi: 10.1038/s41380-021-01062-9.

## Supplement 5. Psychotropic medication codes

**Supplement table 3.** Psychotropic medication codes

UK Biobank code	Drug name
1140879616	Amitriptyline
1140921600	Citalopram
1140879540	Fluoxetine
1140867878	Sertraline
1140916282	Venlafaxine
1140909806	Dosulepin
1140867888	Paroxetine
1141152732	Mirtazapine
1141180212	Escitalopram
1140879634	Trazodone
1140867876	Prozac
1140882236	Seroxat
1141190158	Cipralax
1141200564	Duloxetine
1140867726	Lofepramine
1140879620	Clomipramine
1140867818	Nortriptyline
1140879630	Imipramine
1140879628	Dothiepin
1141151946	Cipramil
1140867948	Amitriptyline
1140867624	Prothiaden
1140867756	Trimipramine
1140867884	Lustral
1141151978	Reboxetine
1141152736	Zispin
1141201834	Cymbalta
1140867690	Anafranil
1140867640	Doxepin
1140867920	Moclobemide
1140867850	Phenelzine
1140879544	Fluvoxamine
1141200570	Yentreve
1140867934	Triptafen
1140867758	Surmontil
1140867914	Tranlycypromine
1140867820	Allegron
1141151982	Edronax
1140882244	Molipaxin
1140879556	Mianserin
1140867852	Nardil
1140867860	Faverin
1140917460	Nefazodone
1140867938	Amitriptyline+Chlordiazepoxide
1140867856	Isocarboxazid
1140867922	Manerix
1140910820	Maoi
1140882312	Sinequan
1140867944	Tranlycypromine+Trifluoperazine
1140867784	Ludiomil
1140867812	Norval
1140867668	Tryptizol
1140867940*	Fluphenazine hydrochloride+Nortriptyline 1.5mg/30mg tablet
1140867942*	Fluphenazine hcl+Nortriptyline 500micrograms/10mg tablet
1140928916	Olanzapine
1141152848	Quetiapine
1140867444	Risperidone
1140879658	Chlorpromazine
1140868120	Trifluoperazine
1141153490	Amisulpride
1140867304	Sulpiride
1141152860	Seroquel
1140867168	Haloperidol
1141195974	Aripiprazole
1140867244	Stelazine
1140867152	Depixol
1140909800	Flupentixol
1140867420	Clozapine
1140879746	Promazine
1141177762	Risperdal



1140867456	Modecate
1140867952	Fluanxol
1140867150	Flupenthixol
1141167976	Zyprexa
1140882100	Zuclopenthixol
1140867342	Clopixol
1140863416	Largactil
1141202024	Abilify
1140882098	Fluphenazine
1140867184	Haldol
1140867092	Serenace
1140882320	Clozaril
1140910358	Chlorpromazine
1140867208	Perphenazine
1140909802	Levomepromazine
1140867134	Pericyazine
1140867306	Dolmatil
1140867210	Fentazin
1140867398	Fluphenazine
1140867078	Benperidol
1140867218	Pimozide
1141201792	Zaponex
1141200458	Denzapine
1140867136	Neulactil
1140879750	Thioridazine
1140867180	Dozic
1140867546	Fluspirilene
1140928260	Panadeine
1140927956	Sertindole
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1140867490	Lithium product
1140867494	Camcolit 250 tablet
1140867498	Liskonum 450mg m/r tablet
1140867500	Phasal 300mg m/r tablet
1140867504	Priadel 200mg m/r tablet
1140867518	Litarex 564mg m/r tablet
1140867520	Li-liquid 5.4mmol/5ml oral solution

*Note:* Adapted from Davis et al. (2019), doi: 10.1002/mpr.1796. \*medication code not included in Davis et al. (2019).

## Supplement 6. Smith et al. mood disorder criteria

**Mood disorder** (adapted from Smith et al. (2013), doi: 10.1371/journal.pone.0075362).

### 1. Probable bipolar disorder (type I):

4642 ever manic/hyper 2 days OR 4653 ever irritable/argumentative for 2 days;  
plus at least 3 from 6156.01 (more active), 6156.02 (more talkative), 6156.03 (needed less sleep), and 6156.04 (more creative/more ideas);  
plus 5663 duration of a week or more;  
plus 5674 needed treatment or caused problems at work.

### 2. Probable bipolar disorder (type II):

4642 ever manic/hyper 2 days OR 4653 ever irritable/argumentative for 2 days;  
plus at least 3 from 6156.01 (more active), 6156.02 (more talkative), 6156.03 (needed less sleep), and 6156.04 (more creative/more ideas);  
plus 5663 duration of a week or more.

### 3. Single probable episode of major depression:

4598 ever depressed/down for a whole week; plus 4609 at least two weeks duration; plus  
4620 only one episode, plus 2090 ever seen a GP or 2100 a psychiatrist for nerves, anxiety, depression  
OR  
4631 ever anhedonic (unenthusiasm/uninterest) for a whole week; plus 5375 at least two weeks; plus  
5386 only one episode; plus 2090 ever seen a GP or 2100 a psychiatrist for nerves, anxiety, depression.

### 4. Probable recurrent major depression (moderate):

4598 ever depressed/down for a whole week; plus 4609 at least two weeks duration; plus 4620 at least two episodes; plus 2090 ever seen a GP (but not a psychiatrist) for nerves, anxiety, depression  
OR  
4631 ever anhedonic (unenthusiasm/uninterest) for a whole week; plus 5375 at least two weeks; plus  
5386 at least two episodes; plus 2090 ever seen a GP (but not a psychiatrist) for nerves, anxiety, depression.

### 5. Probable recurrent major depression (severe):

4598 ever depressed/down for a whole week; plus 4609 at least two weeks duration; plus 4620 at least two episodes; plus 2100 ever seen a psychiatrist for nerves, anxiety, depression  
OR  
4631 ever anhedonic (unenthusiasm/uninterest) for a whole week; plus 5375 at least two weeks; plus  
5386 at least two episodes; plus 2100 ever seen a psychiatrist for nerves, anxiety, depression.

## Supplement 7. Physiological measures

Description of physiological measures reproduced from Mutz et al. (2021).<sup>1</sup>

### Physiological measures

All physiological measures were collected by certified healthcare technicians or nurses using a direct data entry system. Participants were asked to remove any outer garments, shoes, socks or tights. The assessment lasted about 10-15 minutes.

#### *Hand-grip strength*

Hand-grip strength in whole kilogram force units was measured using a Jamar J00105 hydraulic hand dynamometer (measurement range 0-90 kg). Participants were asked to sit upright in a chair and place their forearms on armrests. The dynamometer handle was set to the second incremental slot or, in participants with very large hands, moved to the third slot. Participants kept their elbow adjacent to their side and bent to a 90° angle with their thumb facing upward. A maximal score was obtained from each participant's right and left hand. We used the maximal grip strength of the participant's self-reported dominant hand. If no data on handedness were available, we used the highest value of both hands. This variable has been used previously in UK Biobank research,<sup>2</sup> although other studies have used the highest value of left and right hand<sup>3</sup> or calculated the average grip strength from both hands.<sup>4</sup> We used absolute units because these are the simplest to use in risk assessment. A previous UK Biobank study found no evidence of differences in mortality or disease incidence prediction when grip strength was expressed in absolute terms compared to when expressed relative to anthropometric traits (height, weight, fat-free mass and BMI).<sup>4</sup>

#### *Body composition*

Weight measurements were obtained with a Tanita BC-418 MA body composition analyser, or, in individuals with pacemaker or females who reported that they were or might be pregnant, using a manual scale. Standing height was measured using a Seca 202 height measure. Body mass index (BMI) was calculated as weight divided by standing height squared (kg/m<sup>2</sup>). Waist and hip circumference in cm were measured using a Wessex non-stretchable sprung tape. Waist-to-hip ratio was calculated by dividing waist circumference by hip circumference. Whole body fat mass and fat-free mass in kg and body fat percentage (measurement range 1-75%) were estimated by electrical bio-impedance.

#### *Pulmonary function*

Volumetric measures of lung function were quantified using breath spirometry with a Vitalograph Pneumotrac 6800 following standard procedures. Participants were asked to record two to three blows, each lasting for at least six seconds, within a period of approximately six minutes. The reproducibility of the first two blows was automatically compared and, if acceptable (defined as a ≤5% difference in forced vital capacity (FVC) and forced expiratory volume in one second (FEV<sub>1</sub>)), a third blow was not required. FVC in litres describes the maximum amount of air that can be exhaled when blowing out as fast as possible after a deep breath. FEV<sub>1</sub> in litres describes the amount of air that can be exhaled in one second when blowing out as fast as possible. We used the derived best measure for both FVC and FEV<sub>1</sub> which was the maximum value from reproducible spirometry, in line with previous research.<sup>5</sup> Given that these measures are affected by several factors unrelated to pulmonary function (e.g., effort and body size), we also calculated the ratio of FEV<sub>1</sub> to FVC. Peak expiratory flow (PEF) in litres per minute represents a person's maximum speed of expiration. PEF is determined by physiological factors such as lung volume and elasticity or expiratory muscle strength. It is used for monitoring asthma and diagnosing chronic obstructive pulmonary disease. We calculated the average of all available readings. Spirometry was not performed in participants who confirmed or were unsure that they had any of the following contra-indications: chest infection in the last month (i.e., influenza, bronchitis, severe cold and pneumonia); history of a detached retina; heart attack or surgery to eyes, chest or abdomen in the last three months; history of a collapsed lung; pregnancy in the 1st or 3rd trimester; currently on medication for tuberculosis.

#### *Heel bone mineral density*

Heel bone mineral density was estimated by quantitative ultrasound assessment of the calcaneus using a Sahara Clinical Bone Sonometer. Participants were asked to sit with their back straight and had their left heel measured first. Measurement of both heels was performed only during later stages of the baseline assessment. Measures of speed of sound in metres per second and broadband ultrasound attenuation (decibels/megahertz) were combined into a quantitative ultrasound index. From this an estimate of heel bone mineral density in grams per cm<sup>2</sup> was derived based on the assumption that sound waves travel differently through denser bones.

## Cardiovascular measures

Blood pressure, pulse rate and arterial stiffness (pulse wave velocity) were measured by trained nurses during a separate stage of the baseline assessment.

### *Blood pressure*

Seated systolic and diastolic resting blood pressure in millimetres of mercury (mmHg) was measured twice using an Omron 705 IT digital blood pressure monitor (measurement range 0-255 mmHg) following standard procedures. Participants were asked to loosen or remove any restrictive clothing and put their arm on a desktop. Measurements were taken from the left upper arm or, if impractical, from the right arm. If there was a problem with the measurement, it was repeated. Three different cuff sizes were available and a Seca tape was used to determine the circumference of the midpoint of the upper arm. If the largest cuff size was too small or the digital blood pressure monitor did not produce a reading, a manual sphygmomanometer was used in conjunction with a stethoscope. A second measurement was taken at least one minute after the first measure, following the same procedure. We used an average of the two readings to reduce potential measurement error.

### *Pulse rate*

Resting pulse rate in beats per minute was recorded during the blood pressure measurements using the Omron 705 IT device or, exceptionally, a manual sphygmomanometer. We used an average of the two readings to reduce potential measurement error.

### *Arterial stiffness*

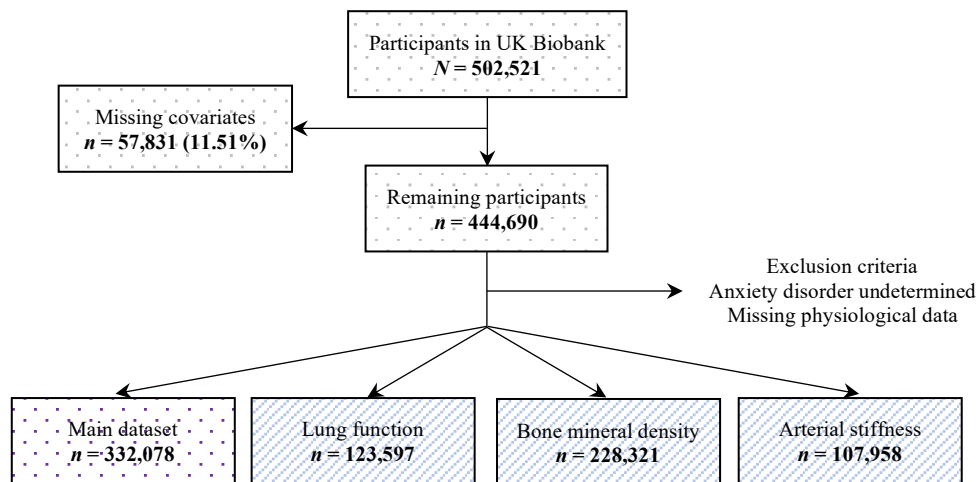
Arterial stiffness (vascular reactivity) is an independent predictor of cardiovascular risk and mortality that can be measured rapidly, inexpensively, and without special training.<sup>6</sup> Resting pulse wave velocity was measured non-invasively using finger photoplethysmography with a PulseTrace PCA2 infra-red sensor. The pulse waveform was recorded over a period of 10-15 seconds, with the sensor clipped to the end of the index finger of the non-dominant hand while the participant was sitting. If the waveform did not fill at least 2/3 of the display of the device, or did not stabilize within one minute, the measurement was repeated on a larger finger or on the thumb. The shape of the waveform is directly related to the time it takes for the pulse wave to travel through the arterial tree in the lower body and to be reflected back to the finger. The time between the peaks of the waveform (the pulse wave peak-to-peak time, i.e., the difference between the peak values of direct and reflected components) was divided by the participant's height to obtain the arterial stiffness index in metres per second. A higher score on the index represents stiffer arteries. The method has been externally validated and is highly correlated with the gold-standard carotid-femoral pulse wave velocity.<sup>7</sup>

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## Supplement 8. Additional results

### Study population



**Supplement figure 1.** Study population. Physiological measures included in the main dataset were hand-grip strength, blood pressure, pulse rate and measures of body composition.

## Sample characteristics

Supplement table 4. Sample characteristics

	Overall (N=502521)	Female		Male	
		Healthy control (N=145364)	Anxiety disorder (N=29482)	Healthy control (N=141992)	Anxiety disorder (N=15240)
<b>Age</b>					
Mean (SD)	56.53 (8.10)	56.44 (8.03)	55.40 (7.78)	56.55 (8.26)	56.00 (7.93)
<b>Ethnicity</b>					
White	472711 (94.1%)	137745 (94.8%)	28667 (97.2%)	135015 (95.1%)	14813 (97.2%)
Mixed-race	2958 (0.6%)	929 (0.6%)	172 (0.6%)	648 (0.5%)	68 (0.4%)
Black	8061 (1.6%)	2524 (1.7%)	234 (0.8%)	2049 (1.4%)	68 (0.4%)
Asian	9882 (2.0%)	2249 (1.5%)	186 (0.6%)	2834 (2.0%)	192 (1.3%)
Chinese	1574 (0.3%)	620 (0.4%)	34 (0.1%)	387 (0.3%)	22 (0.1%)
Other	4558 (0.9%)	1297 (0.9%)	189 (0.6%)	1059 (0.7%)	77 (0.5%)
Prefer not to answer	1662 (0.3%)				
Do not know	217 (0.0%)				
Missing	898 (0.2%)				
<b>Highest qualification</b>					
None	85274 (17.0%)	21710 (14.9%)	3437 (11.7%)	21095 (14.9%)	1859 (12.2%)
O levels/GCSEs/CSEs	132086 (26.3%)	43016 (29.6%)	8394 (28.5%)	34999 (24.6%)	3539 (23.2%)
A levels/NVQ/HND/HNC <sup>1</sup>	113859 (22.7%)	32548 (22.4%)	6926 (23.5%)	34655 (24.4%)	3754 (24.6%)
Degree	161168 (32.1%)	48090 (33.1%)	10725 (36.4%)	51243 (36.1%)	6088 (39.9%)
Prefer not to answer	5493 (1.1%)				
Missing	4641 (0.9%)				
<b>Walking<sup>2</sup></b>					
Mean (SD)	5.39 (1.93)	5.50 (1.83)	5.35 (1.95)	5.33 (1.98)	5.22 (2.05)
Prefer not to answer	979 (0.2%)				
Unable to walk	1929 (0.4%)				
Do not know	6687 (1.3%)				
Missing	874 (0.2%)				
<b>Moderate activity<sup>2</sup></b>					
Mean (SD)	3.63 (2.33)	3.66 (2.31)	3.54 (2.35)	3.62 (2.31)	3.45 (2.34)
Prefer not to answer	2273 (0.5%)				
Do not know	24120 (4.8%)				
Missing	878 (0.2%)				
<b>Vigorous activity<sup>2</sup></b>					
Mean (SD)	1.84 (1.96)	1.74 (1.86)	1.61 (1.82)	2.11 (2.03)	1.98 (2.01)
Prefer not to answer	4116 (0.8%)				
Do not know	22582 (4.5%)				
Missing	878 (0.2%)				
<b>Smoking status</b>					
Never	273528 (54.4%)	90936 (62.6%)	16356 (55.5%)	73322 (51.6%)	7040 (46.2%)
Former	173064 (34.4%)	44022 (30.3%)	10308 (35.0%)	53227 (37.5%)	6202 (40.7%)
Current	52979 (10.5%)	10406 (7.2%)	2818 (9.6%)	15443 (10.9%)	1998 (13.1%)
Prefer not to answer	2059 (0.4%)				
Missing	891 (0.2%)				
<b>Alcohol intake frequency</b>					
Never	40645 (8.1%)	11483 (7.9%)	2609 (8.8%)	6971 (4.9%)	1124 (7.4%)
Special occasions	58011 (11.5%)	19697 (13.6%)	4311 (14.6%)	9157 (6.4%)	1102 (7.2%)
1-3/month	55856 (11.1%)	18469 (12.7%)	3772 (12.8%)	12207 (8.6%)	1404 (9.2%)
1-2/week	129294 (25.7%)	38947 (26.8%)	7293 (24.7%)	37266 (26.2%)	3620 (23.8%)
3-4/week	115443 (23.0%)	32344 (22.3%)	6262 (21.2%)	39309 (27.7%)	3776 (24.8%)
Daily/almost daily	101770 (20.3%)	24424 (16.8%)	5235 (17.8%)	37082 (26.1%)	4214 (27.7%)
Prefer not to answer	605 (0.1%)				
Missing	897 (0.2%)				
<b>Sleep duration</b>					
Mean (SD)	7.15 (1.11)	7.18 (1.02)	7.16 (1.18)	7.13 (1.00)	7.11 (1.16)
Prefer not to answer	386 (0.1%)				
Do not know	2943 (0.6%)				
Missing	887 (0.2%)				
<b>Antihypertensive use</b>					
Yes	104001 (20.70%)	23649 (16.3%)	4749 (16.1%)	31565 (22.2%)	3919 (25.7%)
No	389915 (77.59%)	121715 (83.7%)	24733 (83.9%)	110427 (77.8%)	11321 (74.3%)
Missing	8605 (1.71%)				

Note: Descriptive statistics for covariates based on main dataset  $N=332,078$ . GCSEs = general certificate of secondary education; CSE = certificate of secondary education; NVQ = national vocational qualification; HND = higher national diploma; HNC = higher national certificate. <sup>1</sup>also includes 'other professional qualifications'. <sup>2</sup>number of days per week engaging in these activities for 10+ minutes continuously.

## Case-control numbers - additional analyses

**Supplement table 5.** Case-control numbers for additional analyses

Dataset	Sex	Chronic and/or severe anxiety disorder		Anxiety disorder without depression	
		Healthy control	Anxiety disorder	Healthy control	Anxiety disorder
Main dataset	Female	145364 (98.22%)	2628 (1.78%)	145364 (93.64%)	9865 (6.36%)
	Male	141992 (98.96%)	1491 (1.04%)	141992 (95.87%)	6110 (4.13%)
Lung function	Female	50729 (98.36%)	848 (1.64%)	50729 (93.71%)	3407 (6.29%)
	Male	56695 (98.96%)	597 (1.04%)	56695 (95.82%)	2474 (4.18%)
Bone mineral density	Female	101279 (98.39%)	1655 (1.61%)	101279 (93.33%)	7239 (6.67%)
	Male	97749 (98.98%)	1007 (1.02%)	97749 (95.60%)	4503 (4.40%)
Arterial stiffness	Female	45320 (97.83%)	1006 (2.17%)	45320 (94.27%)	2754 (5.73%)
	Male	46549 (98.90%)	517 (1.10%)	46549 (96.44%)	1717 (3.56%)

*Note:* Percentages correspond to the sex-specific prevalence of cases and controls, separately for the additional analyses of chronic and/or severe anxiety disorder and anxiety disorder without comorbid depression.

## Case-control differences – chronic and/or severe anxiety disorders

**Supplement table 6.** Differences in physiological measures between individuals with chronic and/or severe anxiety disorders and healthy controls

Variable	Female					Male				
	SMD	95% CI		$p_{\text{Bonf.}}$	$p_{\text{BH}}$	SMD	95% CI		$p_{\text{Bonf.}}$	$p_{\text{BH}}$
Hand-grip strength	-0.075	-0.114	-0.037	0.005	0.001	-0.075	-0.127	-0.024	0.088	0.017
Systolic blood pressure	-0.198	-0.237	-0.160	<0.001	<0.001	-0.153	-0.204	-0.102	<0.001	<0.001
Diastolic blood pressure	-0.060	-0.098	-0.021	0.038	0.003	-0.013	-0.064	0.038	>0.999	0.713
Pulse rate	0.079	0.040	0.117	0.002	<0.001	0.130	0.079	0.181	<0.001	<0.001
Body mass index	0.133	0.094	0.172	<0.001	<0.001	0.078	0.027	0.129	0.100	0.017
Body fat percentage	0.113	0.074	0.151	<0.001	<0.001	0.057	0.006	0.108	0.592	0.074
Fat mass	0.158	0.120	0.197	<0.001	<0.001	0.083	0.032	0.134	0.057	0.014
Fat-free mass	0.121	0.083	0.160	<0.001	<0.001	0.050	-0.001	0.101	>0.999	0.104
Waist-hip ratio	0.054	0.016	0.093	0.105	0.009	0.118	0.067	0.169	<0.001	<0.001
Peak expiratory flow	0.107	0.039	0.175	0.032	0.003	-0.045	-0.126	0.036	>0.999	0.415
Forced expiratory volume 1s	0.119	0.052	0.187	0.013	0.002	0.000	-0.081	0.081	>0.999	0.999
Forced vital capacity	0.109	0.041	0.177	0.035	0.003	0.018	-0.063	0.099	>0.999	0.713
FEV <sub>1</sub> / FVC	0.055	-0.013	0.123	>0.999	0.163	-0.044	-0.124	0.037	>0.999	0.437
Heel bone mineral density	0.029	-0.019	0.078	>0.999	0.234	-0.075	-0.137	-0.013	0.324	0.046
Arterial stiffness	-0.029	-0.091	0.033	>0.999	0.186	-0.048	-0.135	0.038	0.997	0.104

*Note:* SMD = standardised mean difference; CI = confidence interval; Bonf. = Bonferroni; BH = Benjamini & Hochberg; FEV<sub>1</sub> = forced expiratory volume in one second; FVC = forced vital capacity. *P*-values for Welch's t-test. Negative values correspond to lower values in anxiety disorder cases.



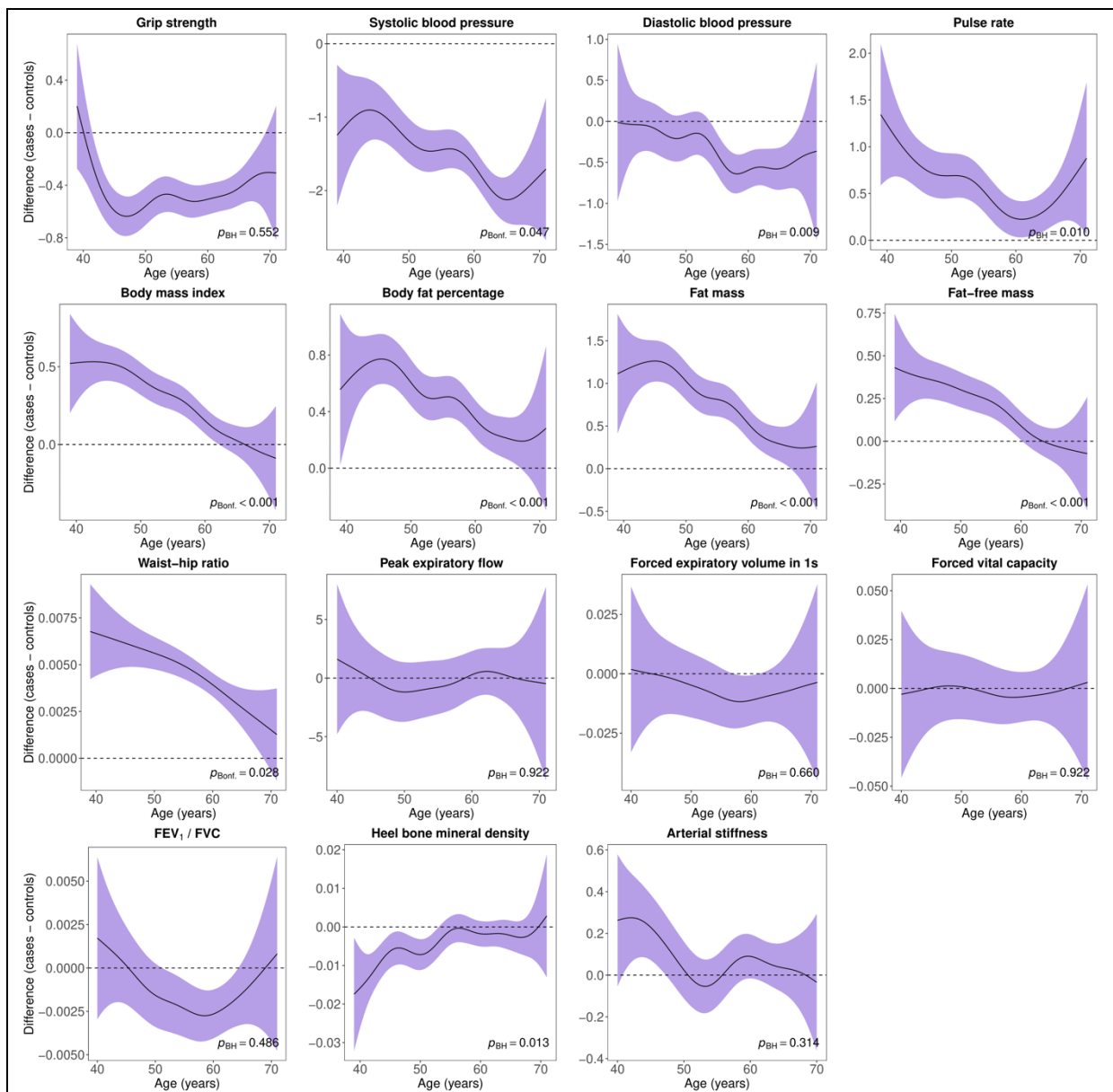
## Case-control differences – anxiety disorders without comorbid depression

**Supplement table 7.** Differences in physiological measures between individuals with anxiety disorders without comorbid depression and healthy controls

Variable	Female					Male				
	SMD	95% CI		$p_{\text{Bonf.}}$	$p_{\text{BH}}$	SMD	95% CI		$p_{\text{Bonf.}}$	$p_{\text{BH}}$
Hand-grip strength	-0.028	-0.048	-0.008	0.118	0.017	-0.059	-0.085	-0.034	<0.001	<0.001
Systolic blood pressure	-0.028	-0.048	-0.007	0.104	0.017	-0.038	-0.063	-0.012	0.055	0.008
Diastolic blood pressure	-0.032	-0.053	-0.012	0.027	0.007	-0.029	-0.055	-0.004	0.354	0.044
Pulse rate	0.039	0.018	0.059	0.005	0.002	0.049	0.023	0.075	0.004	0.001
Body mass index	-0.047	-0.067	-0.026	<0.001	<0.001	-0.058	-0.084	-0.033	<0.001	<0.001
Body fat percentage	-0.019	-0.040	0.001	>0.999	0.101	0.007	-0.018	0.033	>0.999	0.706
Fat mass	-0.026	-0.046	-0.005	0.208	0.023	-0.014	-0.039	0.012	>0.999	0.480
Fat-free mass	-0.049	-0.069	-0.028	<0.001	<0.001	-0.066	-0.092	-0.041	<0.001	<0.001
Waist-hip ratio	0.005	-0.016	0.025	>0.999	0.675	0.040	0.015	0.066	0.032	0.005
Peak expiratory flow	-0.016	-0.050	0.019	>0.999	0.489	-0.020	-0.060	0.020	>0.999	0.480
Forced expiratory volume 1s	-0.014	-0.049	0.020	>0.999	0.491	-0.010	-0.051	0.030	>0.999	0.706
Forced vital capacity	0.008	-0.027	0.042	>0.999	0.675	-0.007	-0.048	0.033	>0.999	0.771
FEV <sub>1</sub> / FVC	-0.048	-0.082	-0.013	0.156	0.019	-0.010	-0.051	0.030	>0.999	0.706
Heel bone mineral density	-0.036	-0.060	-0.012	0.043	0.009	-0.048	-0.078	-0.018	0.026	0.005
Arterial stiffness	-0.019	-0.058	0.019	>0.999	0.251	0.000	-0.048	0.048	>0.999	0.987

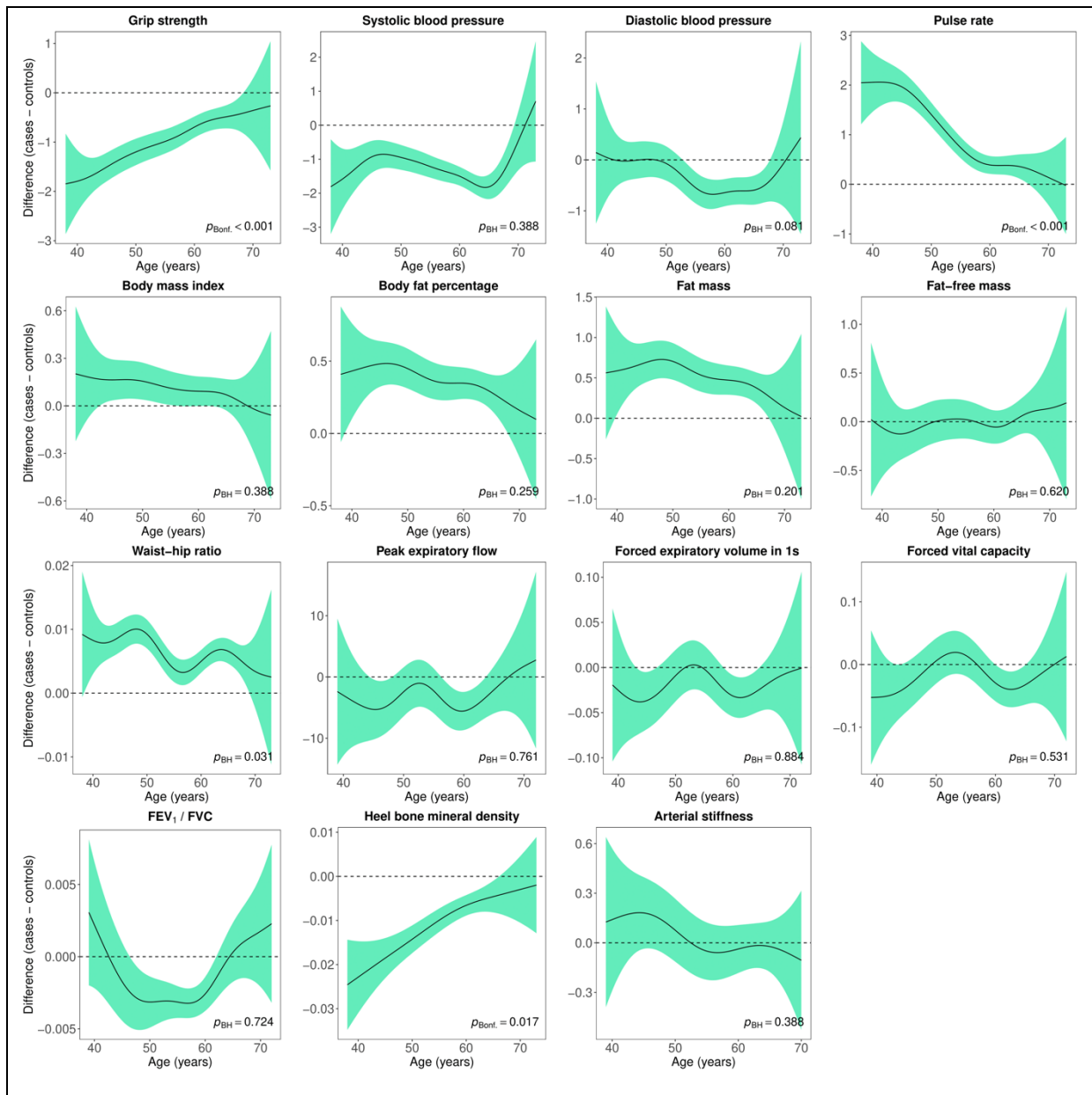
Note: SMD = standardised mean difference; CI = confidence interval; Bonf. = Bonferroni; BH = Benjamini & Hochberg; FEV<sub>1</sub> = forced expiratory volume in one second; FVC = forced vital capacity. *P*-values for Welch's t-test. Negative values correspond to lower values in anxiety disorder cases.

## Difference smooths females



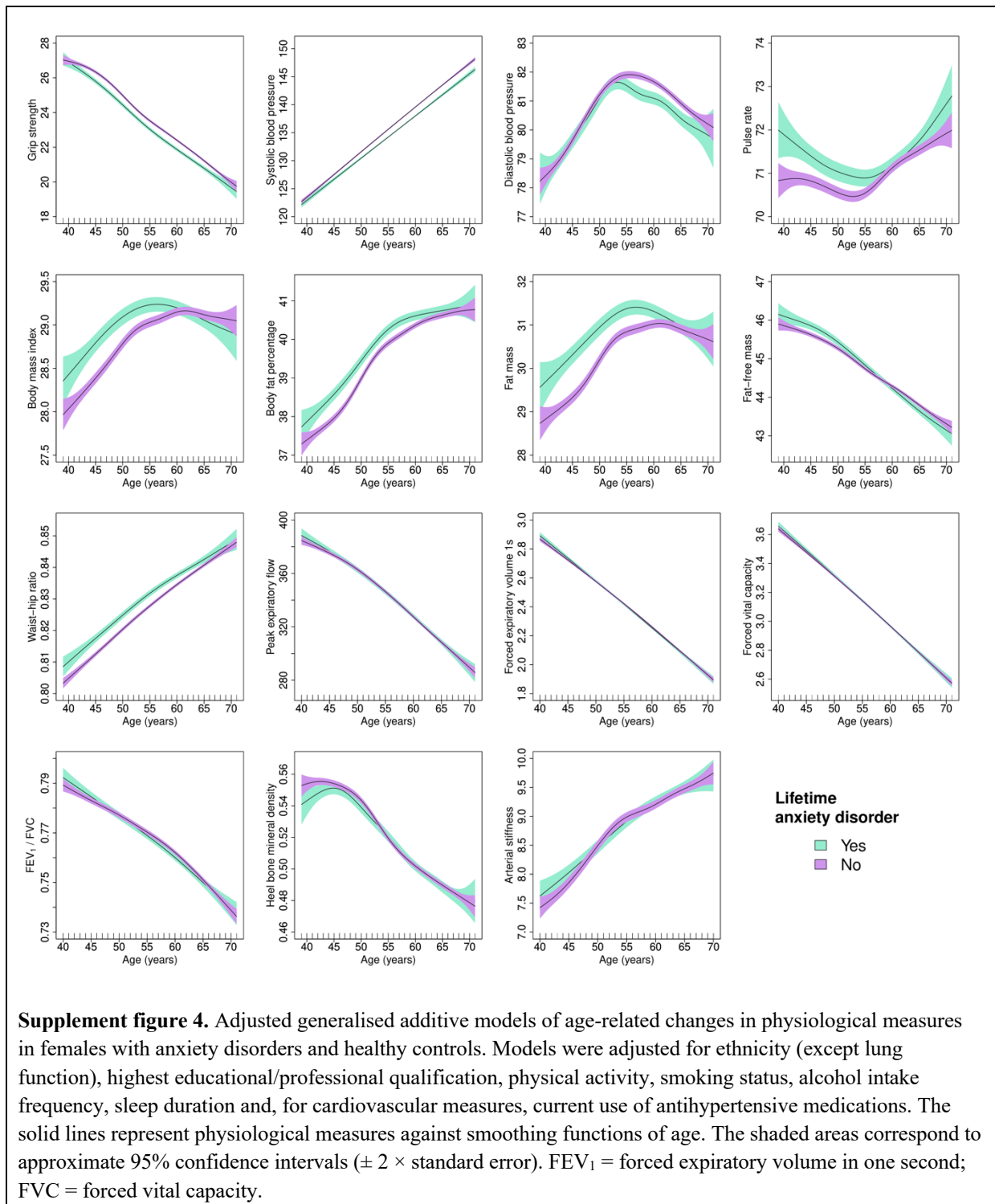
**Supplement figure 2.** Difference smooths comparing age-related changes in physiological measures of females with anxiety disorders to healthy controls. The shaded areas correspond to approximate 95% confidence intervals ( $\pm 2 \times$  standard error). Negative values on the y-axes correspond to lower values in females with anxiety disorders compared to healthy controls. The horizontal lines represent no difference between female cases and controls. FEV<sub>1</sub> = forced expiratory volume in one second; FVC = forced vital capacity; Bonf. = Bonferroni; BH = Benjamini & Hochberg.

### Difference smooths males

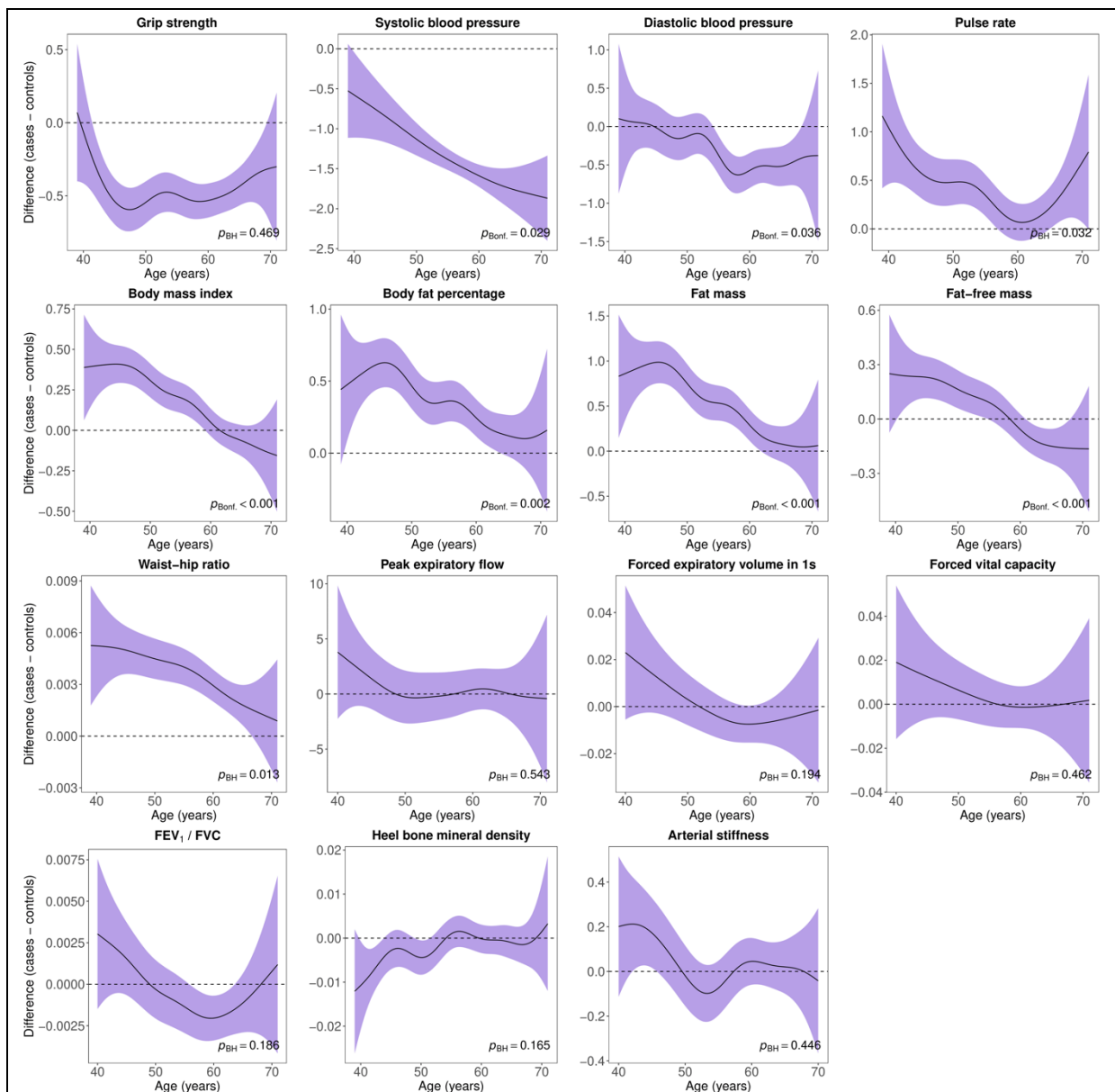


**Supplement figure 3.** Difference smooths comparing age-related changes in physiological measures of males with anxiety disorders to healthy controls. The shaded areas correspond to approximate 95% confidence intervals ( $\pm 2 \times$  standard error). Negative values on the y-axes correspond to lower values in males with anxiety disorders compared to healthy controls. The horizontal lines represent no difference between male cases and controls. FEV<sub>1</sub> = forced expiratory volume in one second; FVC = forced vital capacity; Bonf. = Bonferroni; BH = Benjamini & Hochberg.

## Adjusted GAMs females

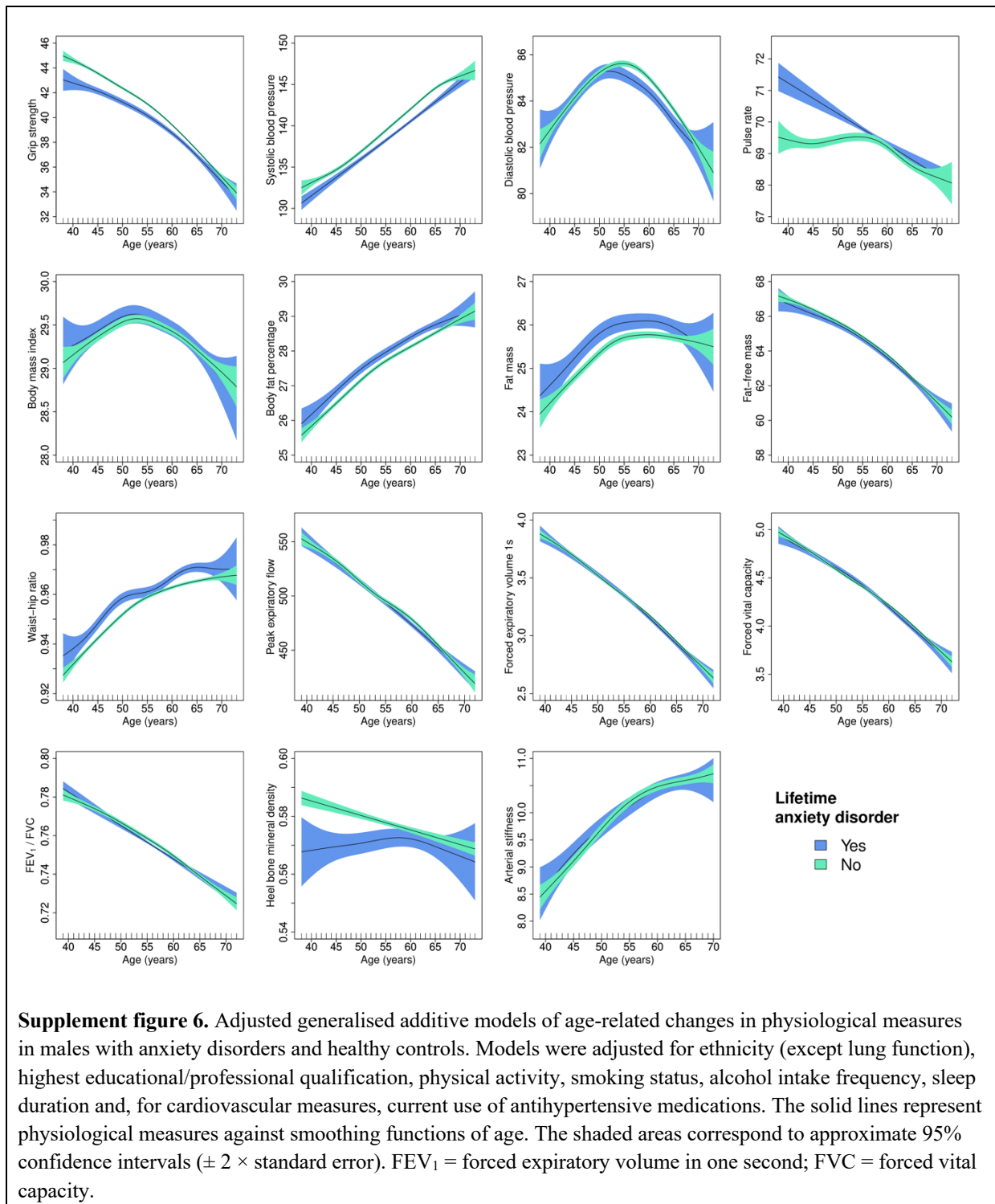


## Adjusted difference smooths females

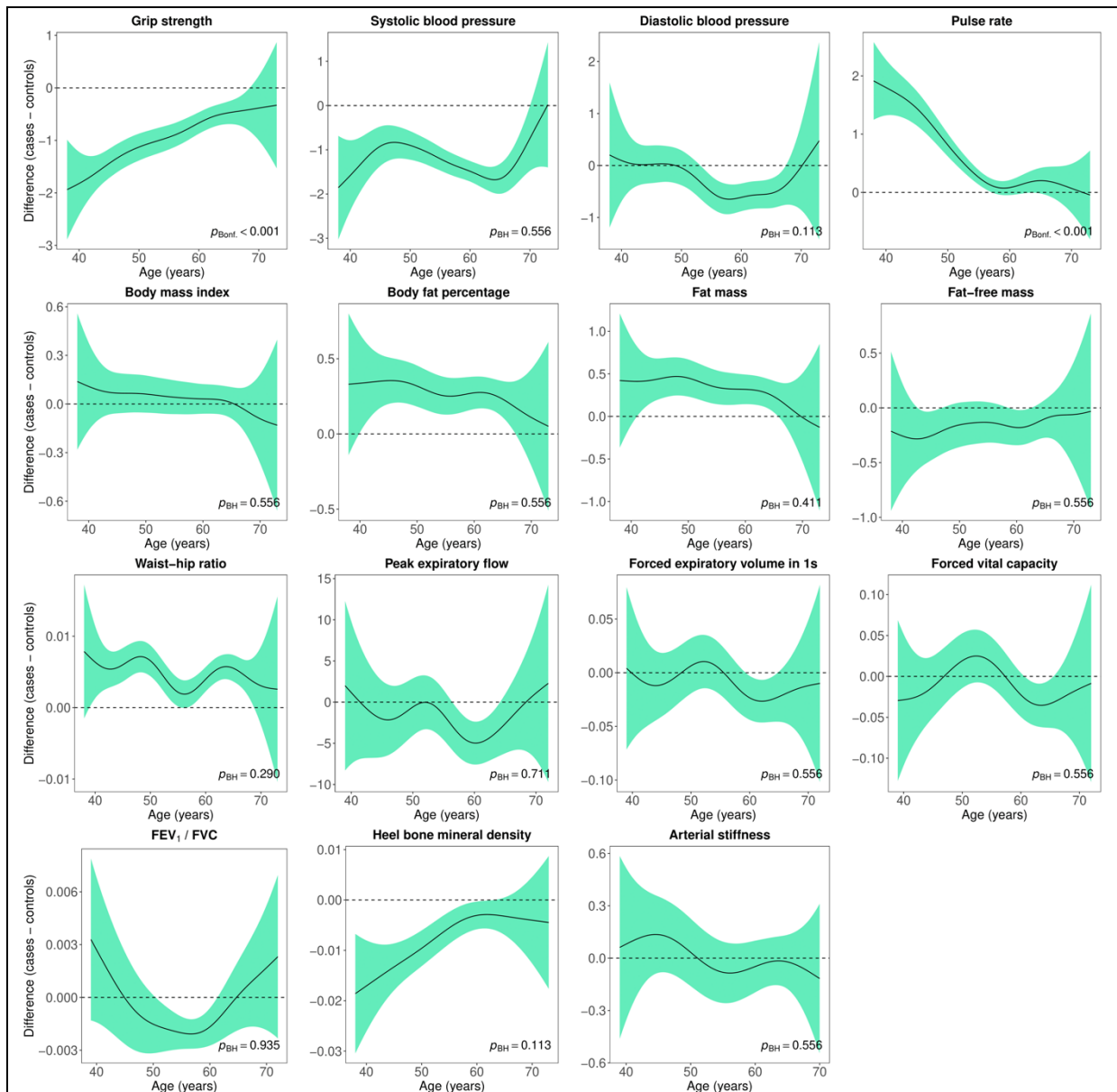


**Supplement figure 5.** Difference smooths comparing age-related changes in physiological measures of females with anxiety disorders to healthy controls. Models were adjusted for ethnicity (except lung function), highest educational/professional qualification, physical activity, smoking status, alcohol intake frequency, sleep duration and, for cardiovascular measures, current use of antihypertensive medications. The shaded areas correspond to approximate 95% confidence intervals ( $\pm 2 \times$  standard error). Negative values on the y-axes correspond to lower values in females with anxiety disorders compared to healthy controls. The horizontal lines represent no difference between female cases and controls. FEV<sub>1</sub> = forced expiratory volume in one second; FVC = forced vital capacity; Bonf. = Bonferroni; BH = Benjamini & Hochberg.

## Adjusted GAMs males

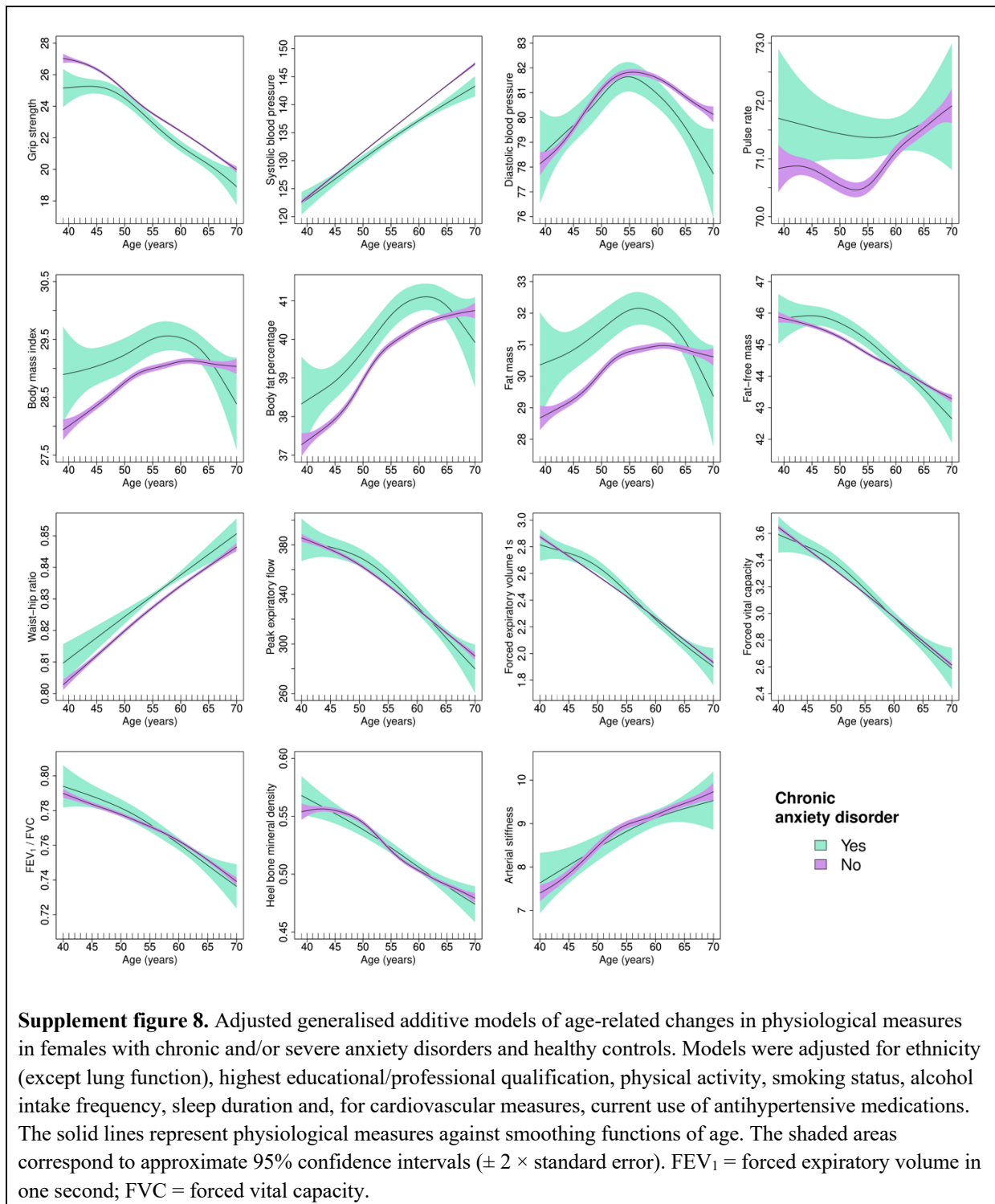


## Adjusted difference smooths males



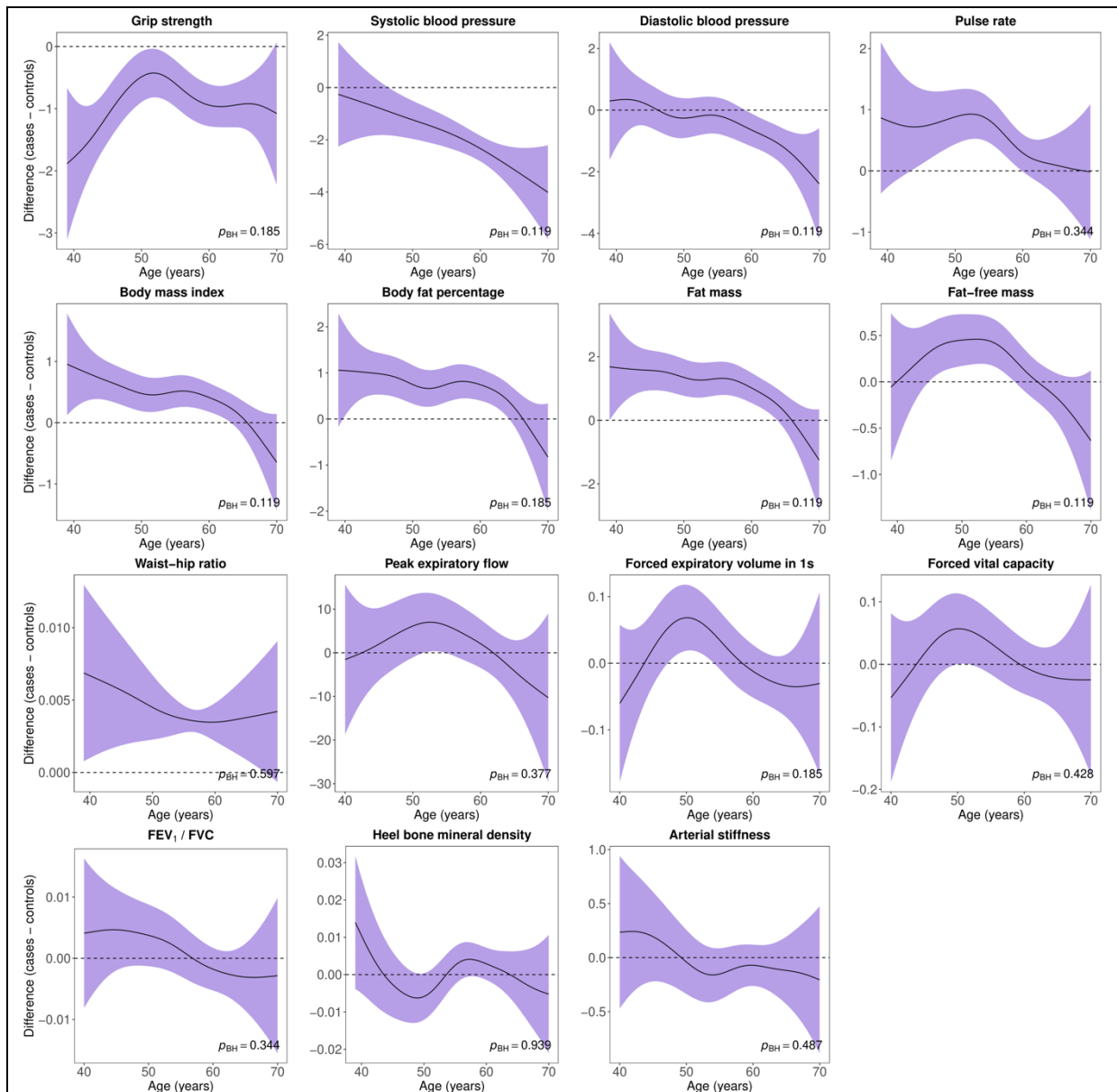
**Supplement figure 7.** Difference smooths comparing age-related changes in physiological measures of males with anxiety disorders to healthy controls. Models were adjusted for ethnicity (except lung function), highest educational/professional qualification, physical activity, smoking status, alcohol intake frequency, sleep duration and, for cardiovascular measures, current use of antihypertensive medications. The shaded areas correspond to approximate 95% confidence intervals ( $\pm 2 \times$  standard error). Negative values on the y-axes correspond to lower values in females with anxiety disorders compared to healthy controls. The horizontal lines represent no difference between female cases and controls. FEV<sub>1</sub> = forced expiratory volume in one second; FVC = forced vital capacity; Bonf. = Bonferroni; BH = Benjamini & Hochberg.

## Adjusted GAMs females – chronic and/or severe anxiety disorders



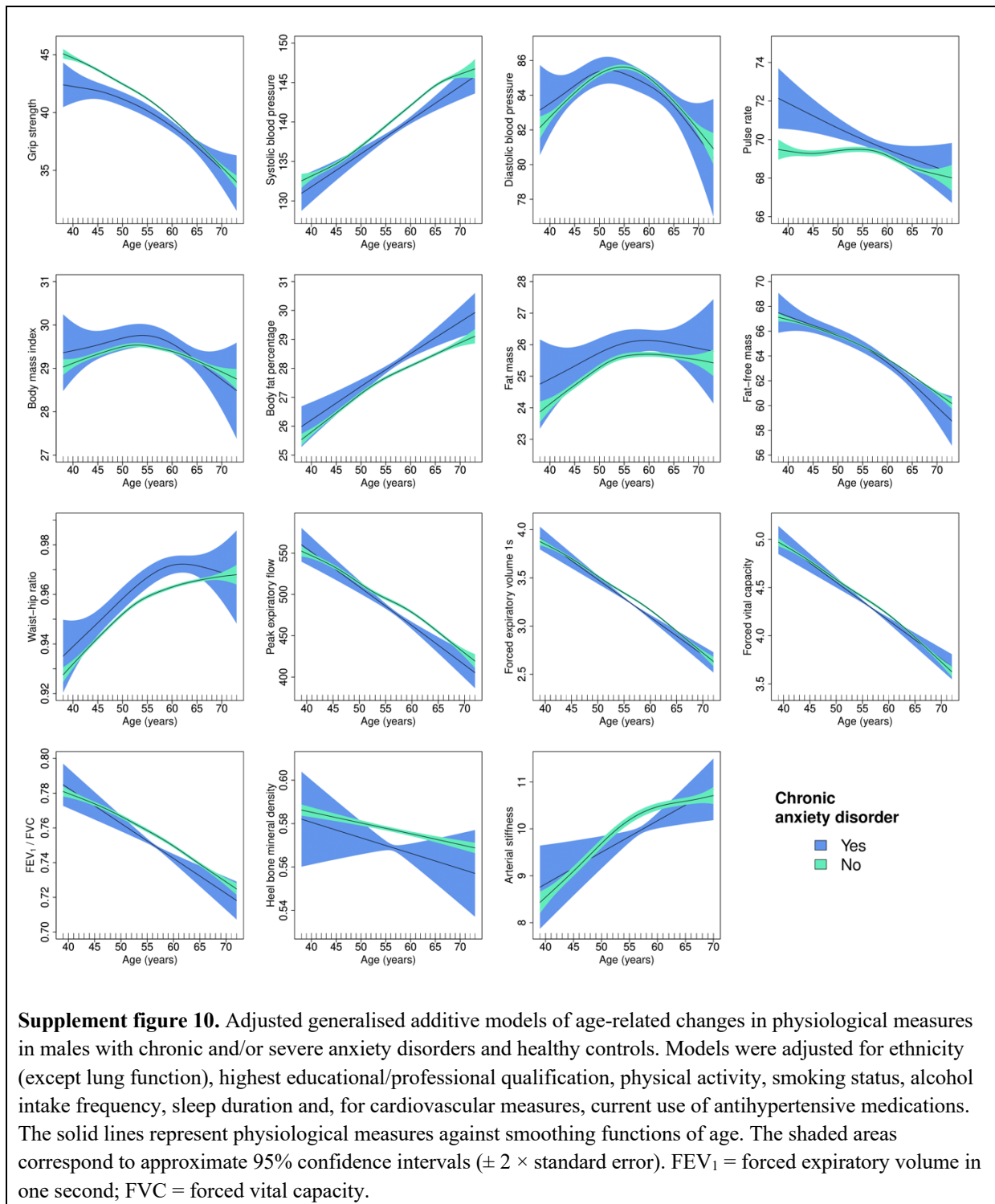


## Adjusted difference smooths females – chronic and/or severe anxiety disorders



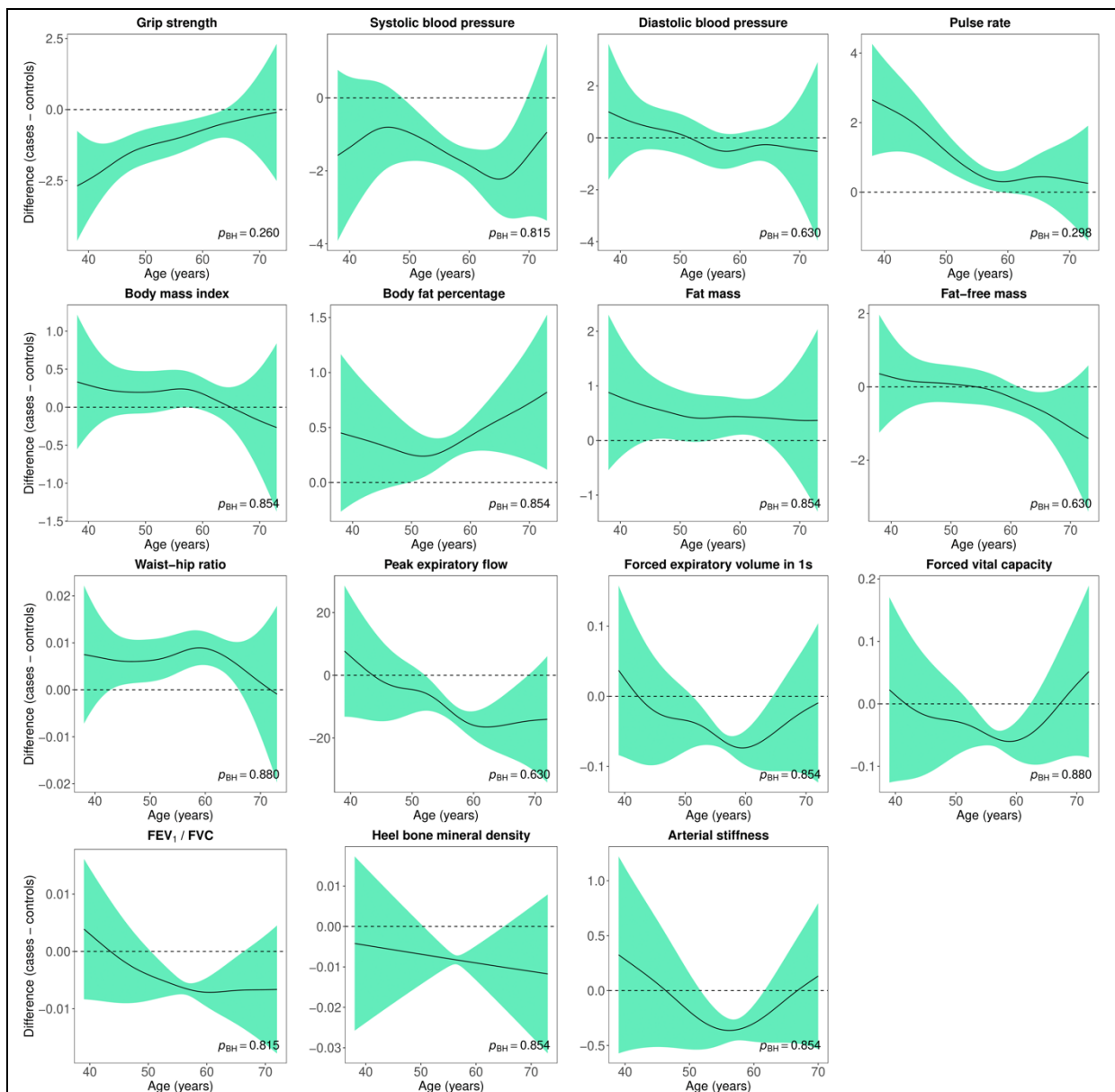
**Supplement figure 9.** Difference smooths comparing age-related changes in physiological measures of females with chronic and/or severe anxiety disorders to healthy controls. Models were adjusted for ethnicity (except lung function), highest educational/professional qualification, physical activity, smoking status, alcohol intake frequency, sleep duration and, for cardiovascular measures, current use of antihypertensive medications. The shaded areas correspond to approximate 95% confidence intervals ( $\pm 2 \times$  standard error). Negative values on the y-axes correspond to lower values in females with chronic and/or severe anxiety disorders compared to healthy controls. The horizontal lines represent no difference between female cases and controls. FEV<sub>1</sub> = forced expiratory volume in one second; FVC = forced vital capacity; Bonf. = Bonferroni; BH = Benjamini & Hochberg.

### Adjusted GAMs males – chronic and/or severe anxiety disorders



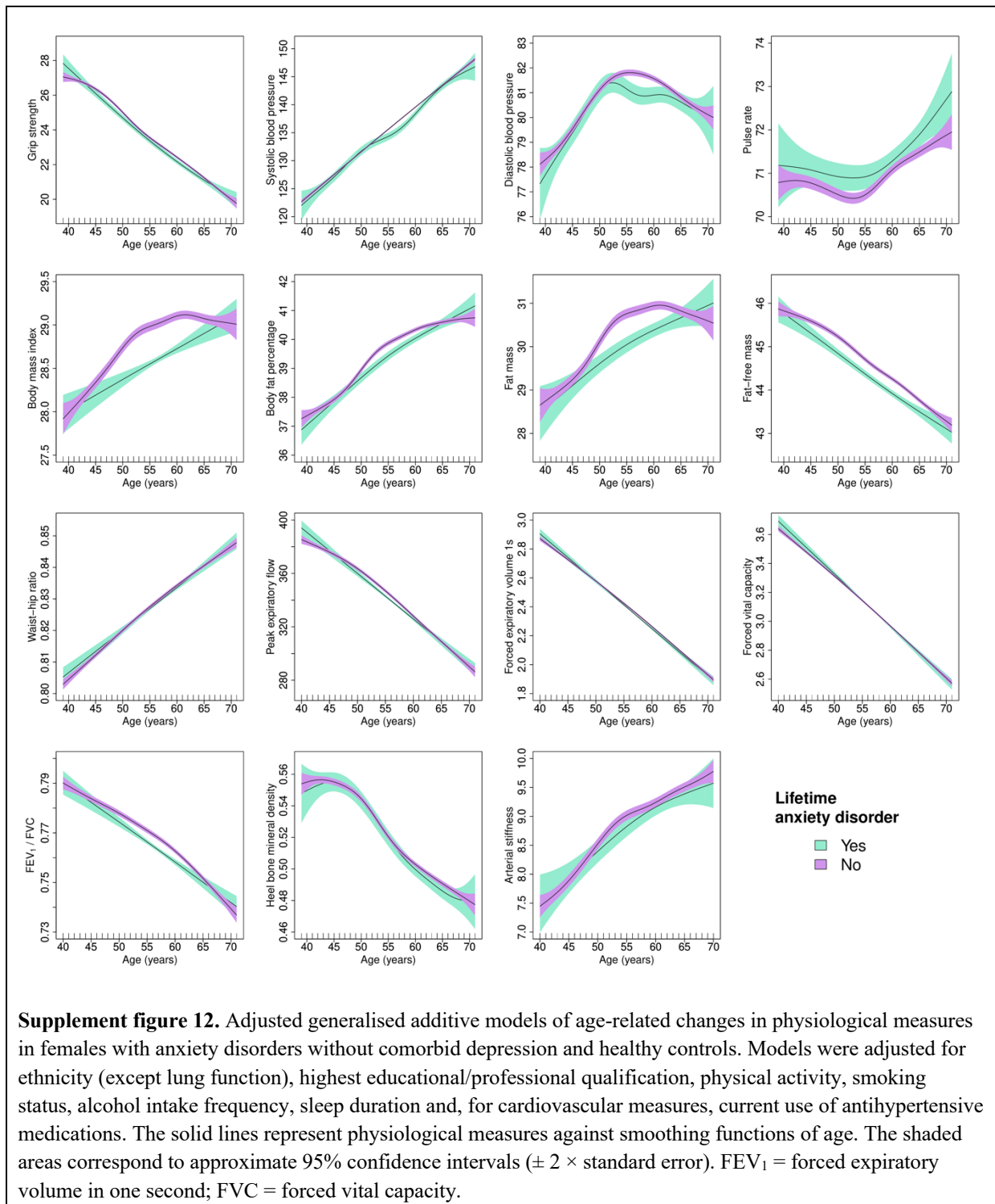
**Supplement figure 10.** Adjusted generalised additive models of age-related changes in physiological measures in males with chronic and/or severe anxiety disorders and healthy controls. Models were adjusted for ethnicity (except lung function), highest educational/professional qualification, physical activity, smoking status, alcohol intake frequency, sleep duration and, for cardiovascular measures, current use of antihypertensive medications. The solid lines represent physiological measures against smoothing functions of age. The shaded areas correspond to approximate 95% confidence intervals ( $\pm 2 \times$  standard error). FEV<sub>1</sub> = forced expiratory volume in one second; FVC = forced vital capacity.

## Adjusted difference smooths males – chronic and/or severe anxiety disorders



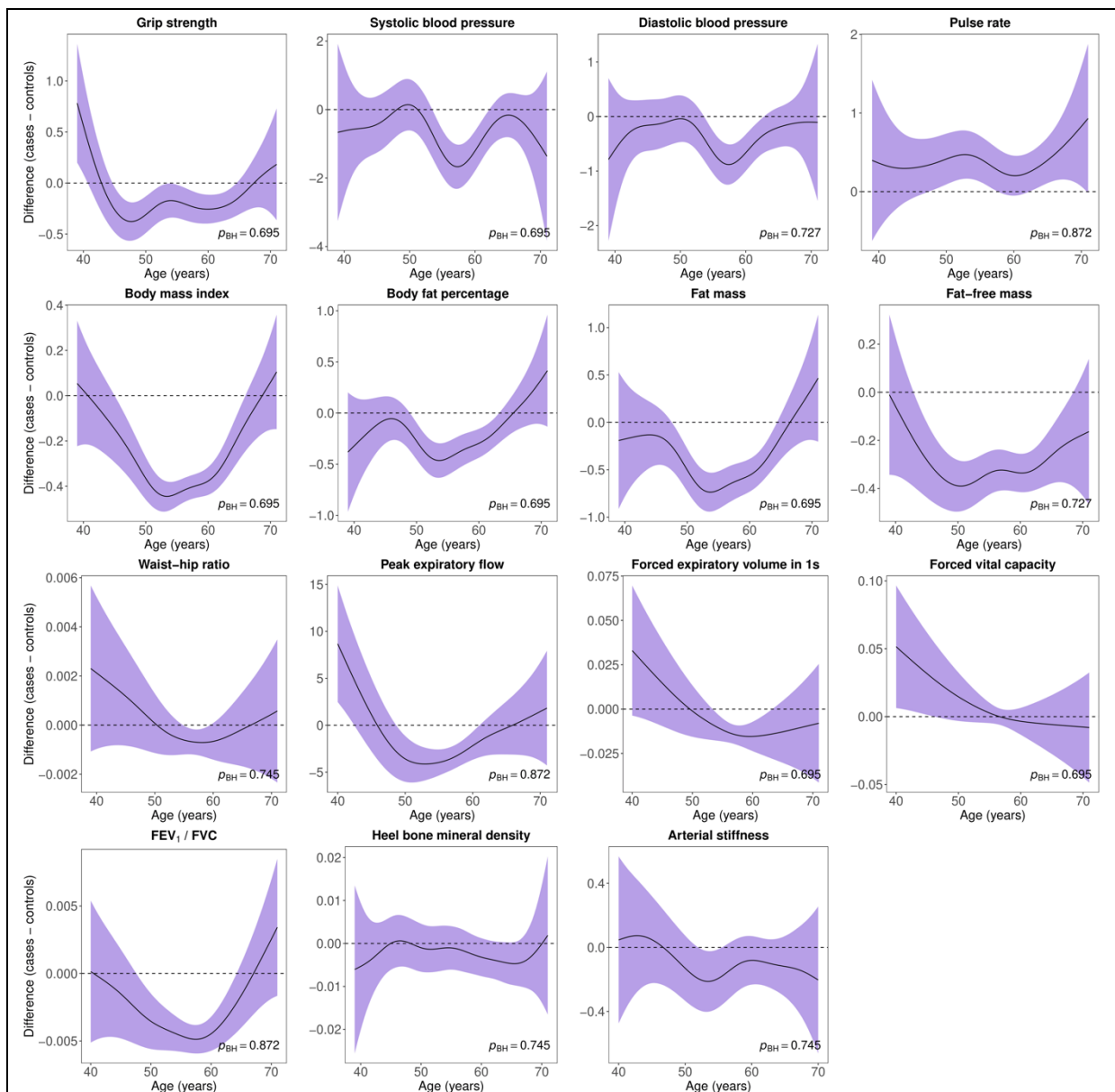
**Supplement figure 11.** Difference smooths comparing age-related changes in physiological measures of males with chronic and/or severe anxiety disorders to healthy controls. Models were adjusted for ethnicity (except lung function), highest educational/professional qualification, physical activity, smoking status, alcohol intake frequency, sleep duration and, for cardiovascular measures, current use of antihypertensive medications. The shaded areas correspond to approximate 95% confidence intervals ( $\pm 2 \times$  standard error). Negative values on the y-axes correspond to lower values in males with chronic and/or severe anxiety disorders compared to healthy controls. The horizontal lines represent no difference between female cases and controls. FEV<sub>1</sub> = forced expiratory volume in one second; FVC = forced vital capacity; Bonf. = Bonferroni; BH = Benjamini & Hochberg.

## Adjusted GAMs females – anxiety disorders without comorbid depression



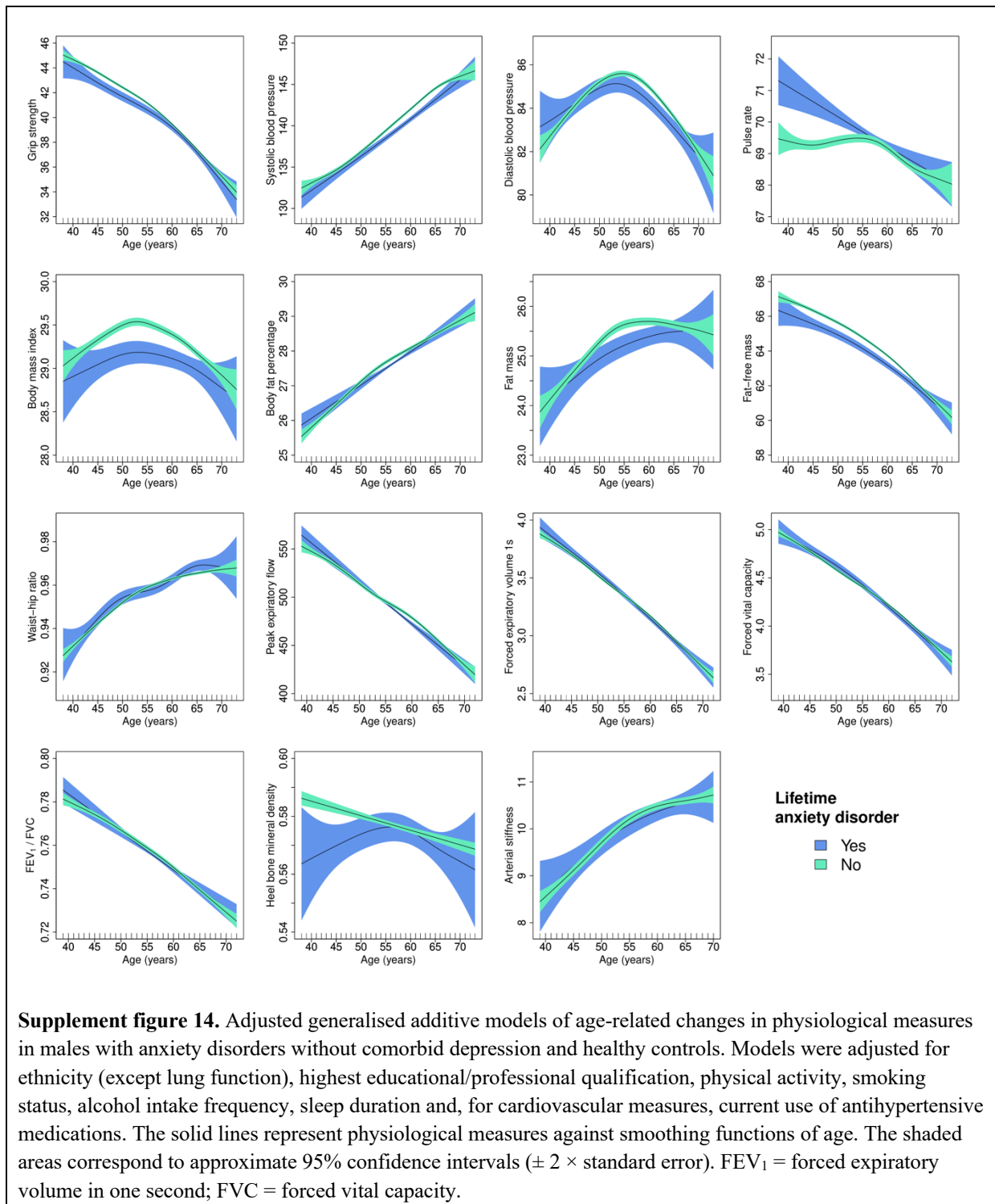
**Supplement figure 12.** Adjusted generalised additive models of age-related changes in physiological measures in females with anxiety disorders without comorbid depression and healthy controls. Models were adjusted for ethnicity (except lung function), highest educational/professional qualification, physical activity, smoking status, alcohol intake frequency, sleep duration and, for cardiovascular measures, current use of antihypertensive medications. The solid lines represent physiological measures against smoothing functions of age. The shaded areas correspond to approximate 95% confidence intervals ( $\pm 2 \times$  standard error). FEV<sub>1</sub> = forced expiratory volume in one second; FVC = forced vital capacity.

### Adjusted difference smooths females – anxiety disorders without comorbid depression



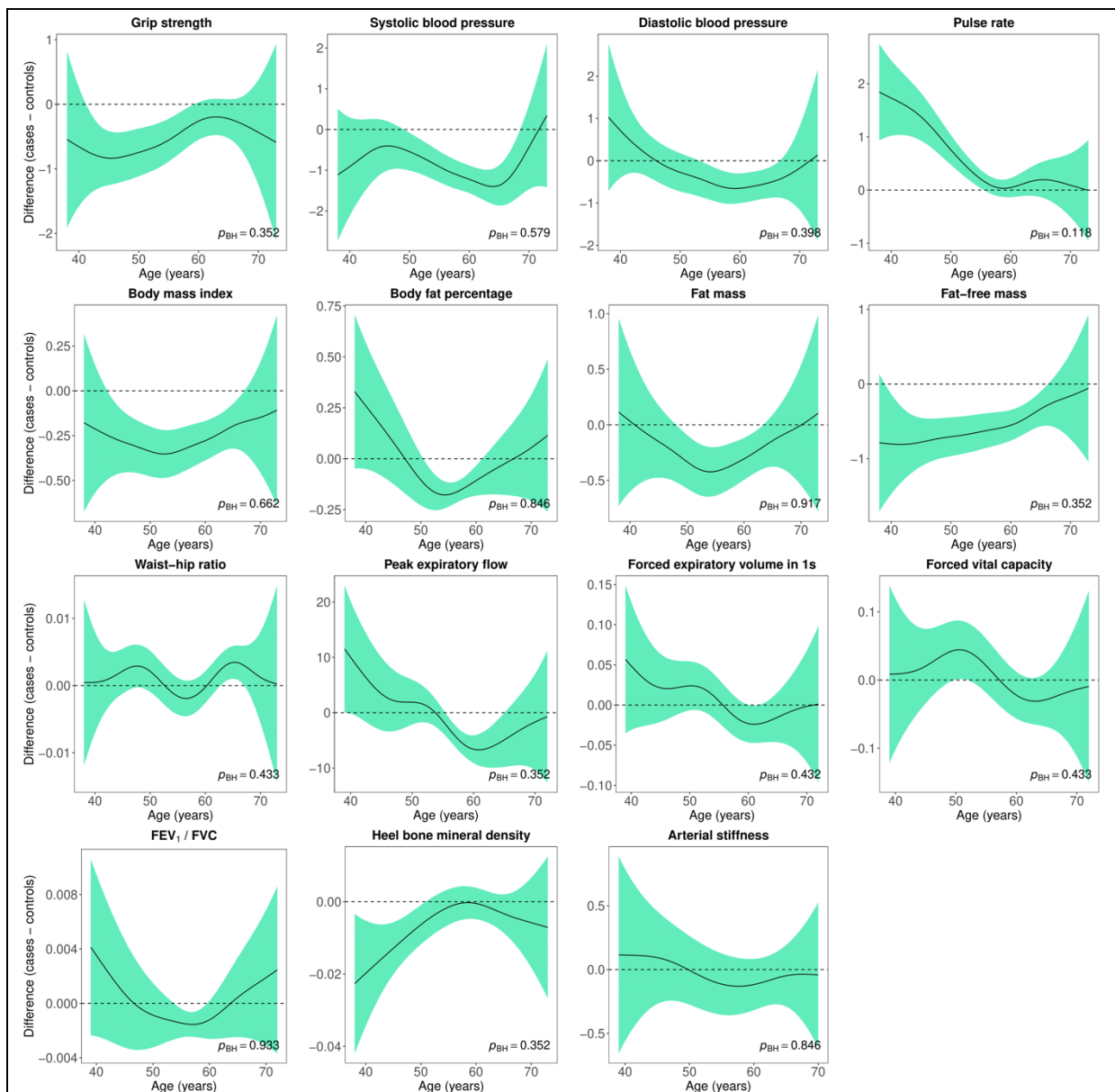
**Supplement figure 13.** Difference smooths comparing age-related changes in physiological measures of females with anxiety disorders without comorbid depression to healthy controls. Models were adjusted for ethnicity (except lung function), highest educational/professional qualification, physical activity, smoking status, alcohol intake frequency, sleep duration and, for cardiovascular measures, current use of antihypertensive medications. The shaded areas correspond to approximate 95% confidence intervals ( $\pm 2 \times$  standard error). Negative values on the y-axes correspond to lower values in females with anxiety disorders without comorbid depression compared to healthy controls. The horizontal lines represent no difference between female cases and controls. FEV<sub>1</sub> = forced expiratory volume in one second; FVC = forced vital capacity; Bonf. = Bonferroni; BH = Benjamini & Hochberg.

## Adjusted GAMs males – anxiety disorders without comorbid depression



**Supplement figure 14.** Adjusted generalised additive models of age-related changes in physiological measures in males with anxiety disorders without comorbid depression and healthy controls. Models were adjusted for ethnicity (except lung function), highest educational/professional qualification, physical activity, smoking status, alcohol intake frequency, sleep duration and, for cardiovascular measures, current use of antihypertensive medications. The solid lines represent physiological measures against smoothing functions of age. The shaded areas correspond to approximate 95% confidence intervals ( $\pm 2 \times$  standard error). FEV<sub>1</sub> = forced expiratory volume in one second; FVC = forced vital capacity.

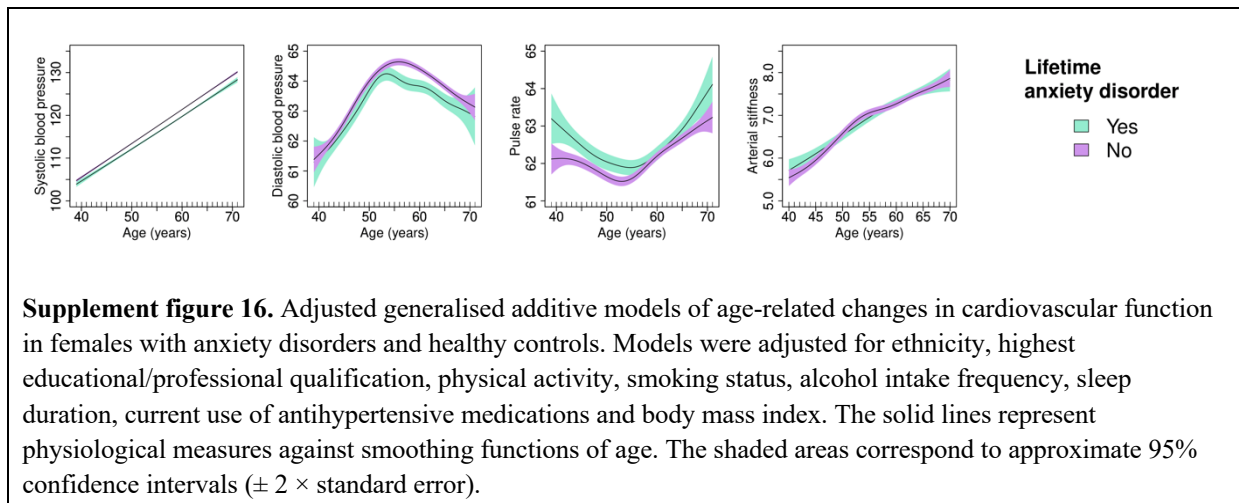
## Adjusted difference smooths males – anxiety disorders without comorbid depression



**Supplement figure 15.** Difference smooths comparing age-related changes in physiological measures of males with anxiety disorders without comorbid depression to healthy controls. Models were adjusted for ethnicity (except lung function), highest educational/professional qualification, physical activity, smoking status, alcohol intake frequency, sleep duration and, for cardiovascular measures, current use of antihypertensive medications. The shaded areas correspond to approximate 95% confidence intervals ( $\pm 2 \times$  standard error). Negative values on the y-axes correspond to lower values in males with anxiety disorders without comorbid depression compared to healthy controls. The horizontal lines represent no difference between female cases and controls. FEV<sub>1</sub> = forced expiratory volume in one second; FVC = forced vital capacity; Bonf. = Bonferroni; BH = Benjamini & Hochberg.

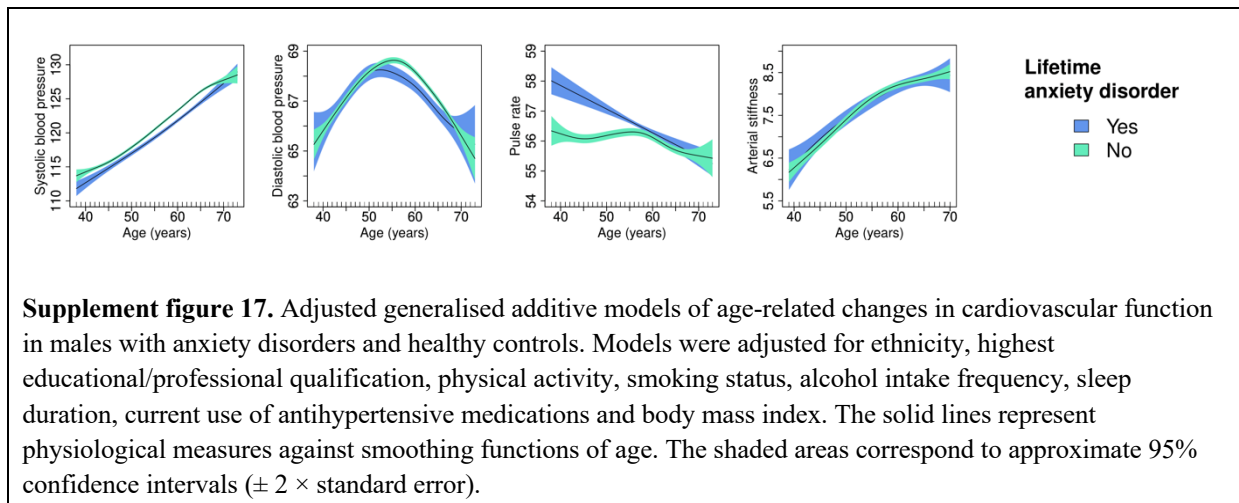


## Adjusted GAMs females – cardiovascular function adjusted for BMI





## Adjusted GAMs males – cardiovascular function adjusted for BMI



## Case-control differences in blood pressure – no antidepressant medication use

**Supplement table 8.** Differences in blood pressure between individuals with anxiety disorders without current antidepressant use and healthy controls

Variable	Female				Male					
	SMD	95% CI		$p_{\text{Bonf.}}$	$p_{\text{BH}}$	SMD	95% CI		$p_{\text{Bonf.}}$	$p_{\text{BH}}$
Systolic blood pressure	-0.119	-0.133	-0.105	<0.001	<0.001	-0.085	-0.103	-0.067	<0.001	<0.001
Diastolic blood pressure	-0.049	-0.063	-0.036	<0.001	<0.001	-0.035	-0.054	-0.017	0.002	<0.001

*Note:* SMD = standardised mean difference; CI = confidence interval; Bonf. = Bonferroni; BH = Benjamini & Hochberg.  $P$ -values for Welch's t-test. Negative values correspond to lower values in anxiety disorder cases.