DOCUMENTOS PARA LA ELABORACION DEL CONTRATO DE PRESTACION DE SERVICIOS

	DOCUMENTO / REQUISITO	RESPONSABLE DE APORTAR EL DOCUMENTO	CUMPLIDO		OBSERVACIÓN
		Contratista	Si	No	
	DOCUMENTOS PRECONTRACTUALES				
0	Propuesta técnica		X		
1	Formato Único de Hoja de Vida para Persona Natural de Función Pública o Persona Jurídica (cuando aplique) – actualizada, diligenciada, en orden cronológico y firmada, se imprime directamente desde el SIGEP II		X		
2	Fotocopia cédula de ciudadanía		X		
3	Certificado de existencia y representación legal (cuando aplique)			X	
4	Libreta Militar o certificación provisional en línea (Articulo 20, ley 1780/2016) (no aplica para hombres mayores a los 50 años de edad)		X		
5	Fotocopia Tarjeta profesional y/o matricula profesional (si se requiere)			X	
6	Fotocopia Antecedentes Tarjeta Profesional y/o matricula profesional (si se requiere)			X	
7	Certificado de Responsabilidades Fiscales de la Contraloría General de la Nación (vigencia no mayor a un mes)		X		
8	Certificado de Antecedentes Disciplinarios de la Procuraduría General de la Nación (vigencia no mayor a un mes)		X		
9	Antecedentes Judiciales Policía Nacional (vigencia no mayor a un mes)		X		
10	Certificado Sistema Nacional de Medidas Correctivas Policía Nacional (vigencia no mayor a un mes)		X		
11	Certificado del Registro de Deudores Alimentarios Morosos – REDAM (vigencia no mayor a un mes) https://carpetaciudadana.and.gov.co/inicio-de-sesion		X		
12	Soportes académicos - Copia de los títulos de estudio obtenidos (técnicos, tecnólogos, profesional y posgrado)		X		
13	Certificados de experiencia laboral/profesional Suscrita por el funcionario o persona competente.		X		
14	Certificación vigente mediante la cual se acredite la afiliación al sistema General de Salud y Pensión (Decreto 510/03 Art 1), no mayor a 30 días, no se acepta formulario de inscripción.		X		
15	Examen Médico Ocupacional menor a 3 años.		X		
16	Fotocopia del Registro Único Tributario (RUT) expedido por la DIAN (actualizado)		X		
17	Certificación de cuenta bancaria activa (no mayor a 45 días)		X		
18	Declaración de bienes y rentas y resolución de conflicto de intereses (ley 2013 de 2019). El cual debe ser diligenciado y publicado en la página de la función publica (SIGEP II-plataforma distinta a la de la hoja de vida) https://www.funcionpublica.gov.co/fdci/		X		
19	Declaración de Renta DIAN o Declaración Juramentada de NO DECLARANTE		X		
20	Curso de integridad, transparencia y lucha contra la corrupción.		X		

	Disponible en el link: https://www.funcionpublica.gov.co/web/eva/curso-integridad				

INFORMACIÓN CONTRATISTA – FAVOR DILIGENCIAR INFORMACION		
Nombre	**Teléfono**	**Correo Electrónico**
FABIO ANDRES PEREA VELASQUEZ	3002140564	ffigo77@gmail.com
Fecha	**Folios**	**Firma**
15/01/2026	92	Fabio Andrés Perea

NOTA: La documentación debe estar organizada en el orden taxativo de este formato en un solo PDF.

PRESTACIÓN DE SERVICIOS PROFESIONALES PARA APOYAR AL IMDER MONTERÍA EN EL DESARROLLO DE ACCIONES TENDIENTES A LA PROMOCIÓN DEL DEPORTE Y EL APROVECHAMIENTO DEL TIEMPO LIBRE DE NIÑOS, NIÑAS, JOVENES Y ADULTOS EN EL MUNICIPIO DE MONTERÍA.

MONTERÍA - CÓRDOBA
ENERO 2026

Doctor.
GERMAN QUINTERO MENDOZA DIRECTOR - IMDER - MONTERIA E.S.D.
ASUNTO: PROPUESTA PARA PRESTACIÓN DE SERVICIOS ROFESIONALES

FABIO ANDRÉS PEREA VELÁSQUEZ, identificado con Cédula de Ciudadanía No. 15.645.398 de Cereté, Licenciado en cultura física, recreación y deportes, en mi calidad de profesional, me permito dirigirme a usted de manera respetuosa fin de presentarle mi propuesta de servicios para Instituto Municipal para el Deporte y la Recreación - IMDER Montería, bajo la modalidad de contratación directa.

La siguiente propuesta, la hago bajo la gravedad de juramento y le manifiesto que no me encuentro en ninguna causal de inhabilidad e incompatibilidad para contratar con la entidad territorial que usted preside, y en tal circunstancia se lo manifestaré oportunamente, como también, no tengo en mi contra demanda alguna por alimentos, ni deuda para con el estado, ni antecedentes judiciales y mucho menos he sido sancionado por la Procuraduría General de la Nación y Contraloría General de la República.

OBJETO: PRESTACIÓN DE SERVICIOS PROFESIONALES PARA APOYAR AL IMDER MONTERÍA EN EL DESARROLLO DE ACCIONES TENDIENTES A LA PROMOCIÓN DEL DEPORTE Y EL APROVECHAMIENTO DEL TIEMPO LIBRE DE NIÑOS, NIÑAS, JOVENES Y ADULTOS EN EL MUNICIPIO DE MONTERÍA.

OBJETIVOS ESPECIFICOS:

1. Brindar apoyo IMDER en el desarrollo de programas y actividades que fomentan la práctica del deporte y la recreación, el aprovechamiento del tiempo libre y la educación física de acuerdo a los lineamientos del Ministerio de Educación Nacional en articulación con las instituciones educativas, para lo cual deberá hacer entrega de un informe de cada apoyo.

2. Coordinar programas de capacitación y formación para entrenadores, monitores enfocados en mejorar las competencias técnicas y de gestión, en diferentes disciplinas deportivas, realizando cronogramas, convocatorias, organización y ejecución, en distintas zonas del municipio de Montería y zona rural, para lo cual deberá entregar cronograma de trabajo semanal para ser avalado por la supervisión.

3. Apoyar en el desarrollo de procesos de formación deportiva, con niños y adolescentes, para lo cual deberá seguir programación entregada por la supervisión.

4. Proponer actividades recreativas al Instituto para que se lleven a cabo en las diferentes comunas de la ciudad de Montería incluyendo la zona rural, para lo cual deberá presentar por lo menos dos propuestas durante la vigencia del contrato.

5. Apoyar en la tabulación de las personas inscritas en los juegos Intercolegiados, torneos realizados en la ciudad de Montería (urbano y rural), para lo cual deberá presentar en medio físico y magnético dichas tabulaciones.

6. Realizar actividades relacionadas con el deporte social comunitario dirigidos a la población en general de la ciudad de Montería, de acuerdo a los lineamientos del Ministerio del Deporte, para lo cual deberá presentar cronograma de trabajo mensual a la supervisión.

7. Apoyar al Instituto Municipal para el Deporte y la Recreación -IMDER- en las actividades, torneos y eventos a realizar en los escenarios deportivos del Municipio de Montería de acuerdo con las solicitudes recibidas y las instrucciones impartidas por el supervisor y/o asignadas por autoridad competente.

VALOR DEL CONTRATO: El valor del contrato a celebrar es la suma de **TREINTA Y CUATRO MILLONES DOSCIENTOS MIL PESOS MCTE ($ 34.200.000,00).**

LUGAR DE EJECUCIÓN:
El Contrato deberá ejecutarse en: El Municipio de Montería, Departamento de Córdoba.

FORMA DE PAGO: El valor del presente contrato se cancelará de la siguiente manera: **SEIS (06) PAGOS IGUALES MENSUALES** por valor de **CINCO MILLONES SETECIENTOS MIL PESOS MCTE ($ 5.700.000),** pagos que se harán efectivos mes vencido, contados a partir de la suscripción del acta de inicio. **PARÁGRAFO PRIMERO:** Para efectos del pago de cada una de las Cuentas de Cobro deberán estar acompañadas de la documentación que exige la oficina de tesorería como lo son: **1)** certificado de cumplimiento, acta parcial de ejecución e informe de supervisión, suscritos por el Supervisor del contrato; previo Informe de

las actividades desarrolladas por el contratista; **2)** Sus respectivos soportes de pago mensual al día, de los aportes al sistema integral de seguridad social (Salud, Pensión y ARL); **3)** Recibo de Pago, debidamente cancelado de los impuestos o estampillas a que tenga lugar el presente contrato, si hay lugar a ello. **PARÁGRAFO SEGUNDO.** Para efectos del pago final, el contratista se obliga a hacer entrega de los archivos, documentos y bienes a su cargo, debidamente inventariados, conforme a las normas y procedimientos que establezca el Archivo General de la Nación y Manual de Funciones de la entidad. Para ello deberá hacer entrega de los certificados de paz y salvo expedido por la Oficina de Almacén Municipal, Oficina de Archivo (o dependencia encargada) y Oficina TIC.

LA IDONEIDA Y LA EXPERIENCIA LABORAL: Es la relacionada en la Hoja de Vida anexada en la presente propuesta donde se puede apreciar la preparación académica y donde se cumple con el perfil técnico exigido en esta contratación, que es de una persona natural la cual contempla labores de promoción y prevención de cuidado de la salud.

Atentamente,

Fabio Andrés Perea

FABIO ANDRÉS PEREA VELÁSQUEZ
CC. 15.645.398 de Cereté

FORMATO ÚNICO

HOJA DE VIDA

Persona Natural

(Leyes 190 de 1995, 489 y 443 de 1998)

Libertad y Orden

ENTIDAD RECEPTORA

1 DATOS PERSONALES

PRIMER APELLIDO	SEGUNDO APELLIDO (O DE CASADA)	NOMBRES
Perea	Velasquez	Fabio Andres

DOCUMENTO DE IDENTIFICACIÓN	GENERO	NACIONALIDAD	PAÍS
C.C. (X) C.E. ( ) PAS ( ) No. 15645398	F ( ) M (X) NB ( )	COL. (X) EXTRANJERO ( )	COLOMBIA

LIBRETA MILITAR
PRIMERA CLASE ( ) SEGUNDA CLASE (X) NÚMERO 15645398 D.M.

FECHA Y LUGAR DE NACIMIENTO		DIRECCIÓN DE CORRESPONDENCIA			
FECHA	DIA 17 MES 09 AÑO 1982	CALLE 29 18 12			
PAÍS	COLOMBIA	PAÍS	COLOMBIA	DEPTO	CÓRDOBA
DEPTO	ATLÁNTICO	MUNICIPIO	MONTERÍA		
MUNICIPIO	BARRANQUILLA	TELÉFONO	7837564	EMAIL	ffigo77@gmail.com

2 FORMACIÓN ACADÉMICA

EDUCACIÓN BÁSICA Y MEDIA

MARQUE CON UNA X EL ÚLTIMO GRADO APROBADO (LOS GRADOS DE 1o. A 6o. DE BACHILLERATO EQUIVALEN A LOS GRADOS 6o. A 11o. DE EDUCACIÓN BÁSICA SECUNDARIA Y MEDIA)

EDUCACIÓN BÁSICA											TÍTULO OBTENIDO	EDUCACION MEDIA		
PRIMARIA					SECUNDARIA				MEDIA		FECHA DE GRADO			
1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	MES	11	AÑO	1999
										X				

EDUCACIÓN SUPERIOR (PREGRADO Y POSTGRADO)

DILIGENCIE ESTE PUNTO EN ESTRICTO ORDEN CRONOLÓGICO, EN MODALIDAD ACADÉMICA ESCRIBA:

TC (TÉCNICA) **TL** (TECNOLÓGICA) **TE** (TECNÓLOGICA ESPECIALIZADA) **UN** (UNIVERSITARIA)

ES (ESPECIALIZACIÓN) **MG** (MAESTRÍA O MAGISTER) **DOC** (DOCTORADO O PHD)

RELACIONE AL FRENTE EL NÚMERO DE LA TARJETA PROFESIONAL (SI ÉSTA HA SIDO PREVISTA EN UNA LEY).

MODALIDAD ACADÉMICA	No. SEMESTRES APROBADOS	GRADUADO		NOMBRE DE LOS ESTUDIOS O TÍTULO OBTENIDO	TERMINACIÓN		No. DE TARJETA PROFESIONAL
		SI	NO		MES	AÑO	
POSTGRADO	2	X		ESPECIALIZACIÓN EN ACTIVIDAD FÍSICA, DEPORTE Y SALUD	01	2006	
PREGRADO	10	X		LICENCIATURA EN EDUCACIÓN FÍSICA, RECREACIÓN Y DEPORTE	11	2004	

3 EDUCACIÓN PARA EL TRABAJO Y EL DESARROLLO HUMANO

EDUCACIÓN PARA EL TRABAJO Y EL DESARROLLO HUMANO

DILIGENCIE ESTE PUNTO EN ESTRICTO ORDEN CRONOLÓGICO; EN LA MODALIDAD, ESCRIBA:

INF (EDUCACIÓN INFORMAL) **TR_DES** (EDUCACIÓN PARA EL TRABAJO Y EL DESARROLLO HUMANO)

FORMATO ÚNICO

HOJA DE VIDA

Persona Natural

(Leyes 190 de 1995, 489 y 443 de 1998)

INSTITUCIÓN	*MODALIDAD*	*No. TOTAL HORAS*	*GRADUADO*		*NOMBRE DE LOS ESTUDIOS O TÍTULOS OBTENIDOS*	*TERMINACIÓN*	
			SI	*NO*		*MES*	*AÑO*
Coldeportes	EDUCACIÓN PARA EL TRABAJO Y DESARROLLO HUMANO	12	X		Programa de capacitación del sistema único de acreditación y certificación del sistema nacional del deporte “preparación para la certificación del desempeño laboral de los entrenadores deportivos al servicio del sistema nacional del deporte”	11	2009
Indeportes Córdoba	EDUCACIÓN PARA EL TRABAJO Y DESARROLLO HUMANO	48	X		Curso de actualización en ciencias del ejercicio y entrenamiento deportivo, aplicado a diferentes especialidades deportivas	04	2010
Pronet	EDUCACIÓN PARA EL TRABAJO Y DESARROLLO HUMANO	32	X		Capacitación en salvamento acuático básico y uso de embarcaciones	11	2010
Universidad de Antioquia	EDUCACIÓN PARA EL TRABAJO Y DESARROLLO HUMANO	24	X		Seminario taller, “entrenamiento funcional”. Instituto universitario de educación física de la Universidad de Antioquia	06	2014
SENA	EDUCACIÓN PARA EL TRABAJO Y DESARROLLO HUMANO	40	X		Formación en Nutrición y Alimentación en el desarrollo humano	10	2016
Universidad de Córdoba	EDUCACIÓN PARA EL TRABAJO Y DESARROLLO HUMANO	16	X		Congreso Internacional de educación física, recreación, deporte y actividad física	09	2017
Universidad de Córdoba	EDUCACIÓN PARA EL TRABAJO Y DESARROLLO HUMANO	8	X		Curso Habilidades Informativas en Investigación	09	2018
Universidad De Córdoba	EDUCACIÓN PARA EL TRABAJO Y DESARROLLO HUMANO	120	X		Diplomado en planeación de cursos basados en resultados de aprendizaje para contextos mediados con tecnologías de la información y la comunicación	11	2020
SENA	EDUCACIÓN PARA EL TRABAJO Y DESARROLLO HUMANO	40	X		Formación en Liderazgo, motivación y trabajo en equipo	04	2021
Universidad de Córdoba	EDUCACIÓN PARA EL TRABAJO Y DESARROLLO HUMANO	20	X		Curso Generalidades del sistema integral de gestión de la calidad – SIGEC	03	2022
Universidad De Córdoba	EDUCACIÓN PARA EL TRABAJO Y DESARROLLO HUMANO	40	X		Curso Mejoramiento Continuo del SIGEC: estrategia y modernización institucional	10	2023
Universidad de Córdoba	EDUCACIÓN PARA EL TRABAJO Y DESARROLLO HUMANO	40	X		Congreso Internacional de educación física, recreación y deporte “EDURED"	11	2023
Universidad De Córdoba	EDUCACIÓN PARA EL TRABAJO Y DESARROLLO HUMANO	40	X		Curso Sistema Integrado de Gestión y aseguramiento de la calidad, estrategia y modernización institucional	12	2025

4 **IDIOMAS**

FORMATO ÚNICO

HOJA DE VIDA

Persona Natural

(Leyes 190 de 1995, 489 y 443 de 1998)

ESPECÍFIQUE LOS IDIOMAS DIFERENTES AL ESPAÑOL QUE: HABLA, LEE, ESCRIBE DE FORMA, REGULAR (**R**), BIEN (**B**) O MUY BIEN (**MB**)

IDIOMA	*LO HABLA*			*LO LEE*			*LO ESCRIBE*		
	R	*B*	*MB*	*R*	*B*	*MB*	*R*	*B*	*MB*

5 EXPERIENCIA LABORAL

RELACIONE SU EXPERIENCIA LABORAL O DE PRESTACIÓN DE SERVICIOS EN ESTRICTO ORDEN CRONOLÓGICO COMENZANDO POR EL ACTUAL

EMPLEO O CONTRATO VIGENTE

EMPRESA O ENTIDAD	*PÚBLICA*	*PRIVADA*	*PAÍ*
UNIVERSIDAD DE CORDOBA	X		COLOMBIA

DEPARTAMENTO	*MUNICIPIO*	*CORREO ELECTRÓNICO ENTIDAD*
CÓRDOBA	MONTERÍA	

TELÉFONOS	*FECHA DE INGRESO*						*FECHA DE RETIRO*					
3006776278	*Día*	20	*Mes*	03	*Año*	2007	*Día*		*Mes*		*Año*	

CARGO O CONTRATO ACTUAL	*DEPENDENCIA*	*DIRECCIÓN*
DOCENTE CATEDRA	AREA DE CULTURA FISICA	CARRERA 6 76 103

EMPLEO O CONTRATO ANTERIOR

EMPRESA O ENTIDAD	*PÚBLICA*	*PRIVADA*	*PAÍ*
Cargando...		X	COLOMBIA

DEPARTAMENTO	*MUNICIPIO*	*CORREO ELECTRÓNICO ENTIDAD*
CÓRDOBA	MONTERÍA	

TELÉFONOS	*FECHA DE INGRESO*						*FECHA DE RETIRO*					
3057774619	*Día*	01	*Mes*	10	*Año*	2015	*Día*	28	*Mes*	02	*Año*	2022

CARGO O CONTRATO ACTUAL	*DEPENDENCIA*	*DIRECCIÓN*
GERENTE ADMINSTRATIVO	ADMINISTRACION GIMNASIO	CALLE 44 8 43 CENTRO COMERCIAL ALAMEDAS

EMPLEO O CONTRATO ANTERIOR

EMPRESA O ENTIDAD	*PÚBLICA*	*PRIVADA*	*PAÍ*
Cargando...		X	COLOMBIA

DEPARTAMENTO	*MUNICIPIO*	*CORREO ELECTRÓNICO ENTIDAD*
CÓRDOBA	MONTERÍA	

TELÉFONOS	*FECHA DE INGRESO*						*FECHA DE RETIRO*					
3106027498	*Día*	27	*Mes*	07	*Año*	2006	*Día*	31	*Mes*	08	*Año*	2012

CARGO O CONTRATO ACTUAL	*DEPENDENCIA*	*DIRECCIÓN*
COORDINADOR DE ACT. DPTIVAS	UNIDAD DE GESTION RECREATIVA Y TIEMPO LIBRE	CALLE 22 20 12 Tacasuan

EMPLEO O CONTRATO ANTERIOR

EMPRESA O ENTIDAD	*PÚBLICA*	*PRIVADA*	*PAÍ*
Cargando...		X	COLOMBIA

DEPARTAMENTO	*MUNICIPIO*	*CORREO ELECTRÓNICO ENTIDAD*
CÓRDOBA	MONTERÍA	

TELÉFONOS	*FECHA DE INGRESO*						*FECHA DE RETIRO*					
3113690241	*Día*	01	*Mes*	04	*Año*	2006	*Día*	30	*Mes*	06	*Año*	2006

CARGO O CONTRATO ACTUAL	*DEPENDENCIA*	*DIRECCIÓN*
CAPACITADOR, ENTRENADOR	AREA DE DOCENTES	CALLE 22 20 12 Tacasuan

FORMATO ÚNICO

HOJA DE VIDA

Persona Natural

(Leyes 190 de 1995, 489 y 443 de 1998)

6 EXPERIENCIA LABORAL DOCENTE

EXPERIENCIAS DEL DOCENTE											
INSTITUCIÓN EDUCATIVA UNIVERSIDAD DE CORDOBA			*PÚBLICA* X	*PRIVADA*	*PAÍS* COLOMBIA						
DEPARTAMENTO CÓRDOBA	*MUNICIPIO* MONTERÍA				*CORREO ELECTRÓNICO*						
TELÉFONOS 3006776278	*FECHA DE INGRESO*						*FECHA DE RETIRO*				
	Día:	20	*Mes:*	03	*Año:*	2007	*Día:*		*Mes:*		*Año:*
AREA DE CONOCIMIENTO CIENCIAS DE LA EDUCACION	*NIVEL EDUCATIVO* PREGRADO						*DIRECCIÓN* CARRERA 6 76 103				

7 TIEMPO TOTAL DE EXPERIENCIA

INDIQUE EL TIEMPO TOTAL DE SU EXPERIENCIA LABORAL EN NÚMERO DE AÑOS Y MESES

OCUPACIÓN	TIEMPO DE EXPERIENCIA	
	AÑOS	MESES
SERVIDOR PÚBLICO	7	7
EMPLEADO DEL SECTOR PRIVADO	12	9
TRABAJADOR INDEPENDIENTE	0	0
EXPERIENCIA DOCENTE	7	7

8 FIRMA DEL SERVIDOR PÚBLICO O CONTRATISTA

MANIFIESTO BAJO LA GRAVEDAD DEL JURAMENTO QUE SI __ NO **X** ME ENCUENTRO DENTRO DE LAS CAUSALES DE INHABILIDAD E INCOPATIBILIDAD DEL ORDEN CONSTITUCIONAL O LEGAL, PARA EJERCER CARGOS EMPLEOS PÚBLICOS O PARA CELEBRAR CONTRATOS DE PRESTACIÓN DE SERVICIOS CON LA ADMINISTRACIÓN PÚBLICA

PARA TODOS LOS EFECTOS LEGALES, CERTIFICO QUE LOS DATOS POR MI ANOTADOS EN EL PRESENTE FORMATO ÚNICO DE HOJA DE VIDA, SON VERACES, (ARTÍCULO 5o. DE LA LEY 190/95).

Ciudad y fecha de diligenciamiento Montería, 14/01/2026

Fabio Andrés Perea

FIRMA DEL SERVIDOR PÚBLICO O CONTRATISTA

FORMATO ÚNICO

HOJA DE VIDA

Persona Natural

(Leyes 190 de 1995, 489 y 443 de 1998)

9 **OBSERVACIONES DEL JEFE DE RECURSOS HUMANOS Y/O CONTRATOS**

CERTIFICO QUE LA INFORMACIÓN AQUÍ SUMINISTRADA HA SIDO CONSTATADA FRENTE A LOS DOCUMENTOS QUE HAN SIDO PRESENTADOS COMO SOPORTE.

Ciudad y fecha

NOMBRE Y FIRMA DEL JEFE DE PERSONAL O DE CONTRATOS

REPUBLICA DE COLOMBIA

IDENTIFICACION PERSONAL

CEDULA DE CIUDADANIA

NUMERO 15645398

PEREA VELASQUEZ

APELLIDOS

FABIO ANDRES

NOMBRES

Fabio Andres Perea

FIRMA



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INDICE DERECHO

FECHA DE NACIMIENTO
17-SEP-1982

BARRANQUILLA
(ATLANTICO)

LUGAR DE NACIMIENTO

1.77	A+	M
ESTATURA	G.S. RH	SEXO

27-JUL-2001 CERETE

FECHA Y LUGAR DE EXPEDICION

REGISTRADOR NACIONAL
IVAN DUQUE ESCOBAR

P-1301000-38097051-M-0015645398-20011221 **01988** 01355C 01 109757502

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FUERZAS MILITARES DE COLOMBIA

EJÉRCITO NACIONAL

COMANDO DE RECLUTAMIENTO Y CONTROL RESERVAS

EL SUSCRITO OFICIAL DE ATENCIÓN AL USUARIO

C E R T I F I C A

Que el señor FABIO ANDRES PEREA VELASQUEZ identificado con Cédula de Ciudadanía No. 15645398, presenta los siguientes datos referentes a la definición de su situación militar:

Primer Nombre:	FABIO
Segundo Nombre:	ANDRES
Primer Apellido:	PEREA
Segundo Apellido:	VELASQUEZ
Tipo Documento:	Cédula de Ciudadanía
Número Documento:	15645398
Clase Libreta Militar:	Segunda Clase

ESTA CERTIFICACIÓN ES GRATUITA
NO ES VÁLIDA COMO DOCUMENTO DE IDENTIFICACIÓN MILITAR
NO REEMPLAZA SU LIBRETA MILITAR

Se firma y se expide en Bogotá D.C. a los 14 días del mes de Enero de 2026, a las 4:11:40 PM.

Cordialmente,

CR. JUAN MAURICIO DIAZ SÁNCHEZ

Director de Reclutamiento - Ejército Nacional

Generó: Sistema Fénix

CONTRALORÍA
GENERAL DE LA REPÚBLICA

LA CONTRALORÍA DELEGADA PARA RESPONSABILIDAD FISCAL , INTERVENCIÓN JUDICIAL Y COBRO COACTIVO

CERTIFICA:

Que una vez consultado el Sistema de Información del Boletín de Responsables Fiscales 'SIBOR', hoy miércoles 14 de enero de 2026, a las 15:07:11, el número de identificación, relacionado a continuación, NO SE ENCUENTRA REPORTADO COMO RESPONSABLE FISCAL.

Tipo Documento	Cédula de Ciudadanía
No. Identificación	15645398
Código de Verificación	15645398260114150711

Esta Certificación es válida en todo el Territorio Nacional, siempre y cuando el tipo y número consignados en el respectivo documento de identificación, coincidan con los aquí registrados.

De conformidad con el Decreto 2150 de 1995 y la Resolución 220 del 5 de octubre de 2004, la firma mecánica aquí plasmada tiene plena validez para todos los efectos legales.

HERNÁN GUILLERMO JOJOA SANTACRUZ
Contralor Delegado

Generó: WEB

PROCURADURIA GENERAL DE LA NACION

CERTIFICADO DE ANTECEDENTES

CERTIFICADO ORDINARIO No. 288529417

PIB
20:52:58

Bogotá DC, 13 de enero del 2026

La PROCURADURIA GENERAL DE LA NACIÓN certifica que una vez consultado el Sistema de Información de Registro de Sanciones e Inhabilidades (SIRI), el(la) señor(a) FABIO ANDRES PEREA VELASQUEZ identificado(a) con Cédula de ciudadanía número 15645398:

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Apellidos y Nombres: **PEREA VELASQUEZ FABIO ANDRES**

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CONFIERE A

Fabio Andrés Perea Velásquez

IDENTIFICADO CON T. I. No 820917-30509 DE MONTERIA

EL TITULO DE

BACHILLER ACADEMICO

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CON C.C. No. 15.645.398 EXPEDIDA EN CERETE
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RESEARCH

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Academic performance and social networks of adolescents in a caribbean city in Colombia

Milton López-Sánchez[1], Carlos Mario Arango-Paternina[2*], Jose Petro-Petro[1], Lucía Lema-Gómez[1], Cleiber Eusse-López[1], Jorge Luis Petro[1], Willinton Watts-Fernández[1] and Fabio Perea-Velásquez[1]

Abstract

Background Social factors and networks of friends can influence an adolescent's behavior, including academic performance (AP) in school. This study aimed to analyze the relationship between AP and adolescents' social networks in a Caribbean city in Colombia.

Methods A cross-sectional study was carried out with 806 schoolchildren from 12 to 17 years old of both sexes (52.7% girls), selected by multi-stage sampling from schools in the rural and urban areas of the city of Montería, Colombia. The AP was obtained from the school records; the sociodemographic variables included the location of the school (rural or urban), family structure, family functioning (Apgar score), and family affluence scale. Social network variables included social activity, popularity, reciprocity, homophily, friends' academic performance, network size, network density, cluster of friends, and centrality.

Results The AP was inversely associated with the Apgar score in boys. No associations of AP with the school location, family structure, family affluence scale, and age were observed. In social network variables, AP was positively associated with popularity and friends' academic performance in girls and boys, and negatively associated with homophily in boys.

Conclusions AP was associated with social network variables. These results could help implement interventions to improve adolescents' social environment and AP.

Keywords Education, Friendship, Social Network Analysis

Background

Academic performance (AP) of students is an essential indicator of intellectual health, and it has been one of the leading indicators to evaluate the educational development of a country; therefore, improving AP levels is considered a fundamental part of the development of human capital in all nations [1]. Although AP is a concept that provokes debate (i.e., by its definition, factors that influence its development and evaluation), the AP expresses the progress or "performance" of students in a particular area or academic situation through a grade which is assigned based on an evaluation system [2, 3]. In this context, standardized academic tests employed to evaluate

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the AP level serve as an input to draw educational policies and strategies and compare the level of educational development between countries [4]. In this sense, there is concern about the educational level of Latin America because the AP (i.e., reading, mathematics, and science) is inferior compared to the AP average of countries of the Organisation for Economic Co-operation and Development (OECD) [5]. This panorama imposes the need to evaluate the factors associated with AP under the sociodemographic conditions of Latin American countries, which contributes to the management and development of strategies to improve the AP of students [6].

As a complex phenomenon, AP is influenced by multiple factors, such as personal, economic, educational, and social aspects [7–9]. Particularly, previous research has indicated that the social networks of friends may influence the behaviors of adolescents (e.g., alcohol consumption, tobacco, and physical activity) [10, 11], including the AP [12–16]. Frequent social interaction within groups enables influence through encouragement, advice, and group pressure. Social interaction is also an important element for adolescents because, within these networks, they find affection, information, and recognition. Simultaneously, they create new social connections, shape subcultures and behavioral norms [17]. Children and adolescents spend much of their lives interacting with their peers at school. In these interactions, social networks are forged, norms are structured, and behaviors are influenced [18]. Particularly during adolescence, when family ties gradually become less influential [19] and the network of friends is expanded [20]. These friendly relationships with peers are also related to academic performance [16], relationships that can be positive or negative [21]. Previous research has indicated that belonging to a group of friends can positively serve academic success; schoolchildren who perceive themselves as socially isolated have lower academic performance than those who feel supported by their friends [22]. In this sense, adolescents who enjoy positive relationships with their peers tend to excel academically in response to various mechanisms of social influence [23]. Therefore, school social structures are valuable for school performance and adaptation. The social relationships established and sustained within the school represent one of the most important facets of the schooling process.

Social network analysis is a sound theoretical and analytical tool to investigate the structure of the group of friends with whom the individual interacts in socialization environments [24], such as at school. This tool helps to analyze the network actors' connection patterns, allowing the identification of different sociometric attributes of the structure of the social network of friends [25]. Social network analysis also enables the use of network data to predict the strength of ties between individuals through those attributes and the level of influence exerted on individual behaviors [26]. For example, social network analysis enables identifying those actors who tend to receive a more significant number of friendship nominations within the network (popular actors) [25], and those who tend to make more friendship nominations, an indicator of high social activity. As well, the degree of similarity between the individuals that are interconnected in the network, which is known as homophily [27]. It is also possible to identify network size and density, clusters of friends, and actors with a centralized or peripheral position within the network, among other sociometric parameters [25].

Knowing the structure of the social network is critical to understanding the dynamics of collective entities, such as social support, social influence, or social capital, entities of particular interest for school performance [28]. By applying social network analysis to explore a complex phenomenon such as AP in adolescence, the understanding of AP is broadened from a multidisciplinary perspective, which could contribute to formulating educational policies and strategies. However, in Latin American countries, such as Colombia, which face critical educational quality challenges [29], studies of social networks in aspects related to school performance are scarce. Considering these aspects, we hypothesize that network measures will be associated with AP. Therefore, the purpose of this study was to analyze the association between AP with social networks in adolescents from a Caribbean city in Colombia.

Methodology

Design and sample

This study is part of the research project "Determinants of academic achievement, health, and wellness in school-age children" (De-Redes). The study was conducted with a cross-sectional design in adolescents aged 12 to 17 years from a Caribbean city in Colombia. The study complied with the guidelines stipulated in the Declaration of Helsinki, and its protocol was approved by an ethics committee of Universidad de Antioquia (No. 2017-021). Multi-stage sampling was carried out in a sample frame of around 80,000 schoolchildren registered in 63 public schools in the city for 2018 (80% in the urban sector), of which 30% were schoolchildren in grades 7 and 10. Ten schools were randomly selected, and two did not allow access to the students' academic performance records. In the schools included, one classroom was randomly selected in each grade (7th through 10th), resulting in 32 classrooms in the eight schools. Students from these classrooms were invited to participate in the study (n=1113) and received informed assent, and their parents received informed consent. Students who returned the signed informed assent and consent forms were

included in the study. Students with missing data were excluded from the analysis. The total study sample consisted of 806 adolescents.

Measurements

Academic performance The academic performance variable was obtained by consulting school records. In them, a scale from 1 to 10 was used to assess academic performance, and for this study, the academic grade point averages were obtained in all school courses.

Sociodemographic variables: The school's location (urban or rural), the sex, and the age of each student were recorded. For the family aspects, the students reported the type of family structure taking into account three categories: nuclear family, made up of both parents; single-parent family, for those students who reported living with one of the parents; and another family structure, for those families other than nuclear and single-parent families. Additionally, participants filled out the validated Apgar instrument, which has good internal consistency with Cronbach's alpha coefficient of 0.81 and McDonald's omega coefficient of 0.82 [30]. The student's perception of the functioning of the family in five dimensions was assessed (one item for each one): adaptation, cooperation, growth, affectivity, and problem-solving. Each dimension had a score from 0 to 5, and the final score ranged from 0 to 25. The Family Affluence Scale (FAS) was used to obtain a proxy of economic position [31]. FAS has good criterion validity reported in previous studies (Spearman correlation=0.87 and kappa index=0.57) [32]. This scale is composed of four questions inquiring about the number of cars and computers in the home, internet accessibility at home, and whether the student has his own bedroom, with a scale of none=0; one=1; two or more=2. The total score ranged from 0 to 8.

Social network variables To identify the social network of friends, the students received a list with the names of their classmates to nominate their best friends within the classroom, with no limit on the number of nominations. The participants were instructed that best friends were those with whom they have a close friendship, share activities frequently, and have common interests in some activities. This specification was based on the recommendation made in the friendship literature [33] to distinguish between best friends, friends, and peers. With these nominations, an egocentric analysis of the social network of friends was carried out, calculating the following social network variables, considered of utility in this type of network analysis [34].

1) *Social activity* reflects the social expansiveness of the student and is extracted by counting the number of nominations made.
2) *Popularity* indicates the level of reputation of the student within the social network of friends and is extracted by counting the number of nominations received.
3) *Reciprocity* reflects the level of closeness of friendship ties and is based on the percentage of reciprocal nominations; that is, when A nominates B and B nominates A.
4) *Homophily* reflects the student's tendency to nominate friends with whom the level of academic performance is shared (similarity) and is defined as the average of the absolute differences in the individual AP and the AP of their friends.
5) *Average academic performance of friends* indicated the magnitude of academic performance surrounding the student and was calculated by averaging the academic performance of the student's friends.
6) *Network size* reflected the breadth of the social network of friends and was calculated by counting the number of classmates with whom the student has friendship ties.
7) *Network density* indicated the degree of connectivity within the personal network of friends and was calculated by dividing the network size by the number of potential connections.
8) *Cluster of friends* reflected the student's tendency to form friendship triangles and were defined by the number of times the student was part of triads of friends.
9) *Centrality* indicated the level of importance of the actor within the network in terms of connectivity. It was calculated by counting the number of times the student was on the shortest route between two members of the network of friends.

Since all these network variables had a non-normal distribution, they were transformed using the two-step approach [35].

Analysis plan

Data normality was tested by the Kolmoronov-Smirnov test. Descriptive statistics were stratified by sex. Proportions, means, and standard deviation were analyzed using the chi-square test for categorical variables and the t-test for continuous variables. Associations between social network variables and academic performance were analyzed with bivariate and multivariate linear regression models stratified by gender. Confidence intervals (95%) were estimated; the level of significance was established at p-value<0.05, and the effect size was calculated based on Cohen's f^2 [36], both in bivariate and multivariate associations. The Homer-Lemeshow criterion [37] was applied for the multivariate models so that the variables with p-values<0.25 in the bivariate associations were included in the multivariate

linear regression models. Social network variables were obtained using the UCINET program [37]. The SPSS Statistical Program for Windows v.24 (IBM Corp., Armonk, N.Y., USA) was used to conduct the analyses.

Results

In this study, the sample consisted of 806 adolescents (12 to 17 years old) of both sexes (n=425, 52.7% girls), belonging to schools in urban and rural areas (n=637, 79% urban) of the city of Monteria, Colombia. Most of these students reported that they belonged to a nuclear-type family structure (n=538, 66.75%), with no differences between boys and girls in the distribution of the different types of family structure. The score on the family affluence scale and family functioning (Apgar score) showed no difference according to sex ($p=0.166$ and $p=0.125$, respectively). However, girls had higher AP than boys ($p=0.001$). Regarding the variables of the social network, differences were found between boys and girls in reciprocity ($p=0.008$), homophily ($p=0.001$), the academic performance of friends ($p=0.005$), and network density ($p=0.003$). No differences were found between boys and girls in the other network variables. These results are presented in Table 1.

The bivariate association analysis between AP and sociodemographic variables showed that there was an association between AP and the school location (i.e., rural area as reference), with a small effect size, in adolescents of both sexes (girls: $p<0.01$, $f^2=0.12$, boys: $p<0.01$, $f^2=0.08$). Considering family structure (i.e., 'other' as a reference), no significant association was found between AP and single-parent or nuclear structure in girls or boys. In contrast, age was inversely associated with AP with a small effect size in both sexes (girls: $p<0.01$, $f^2=0.03$; boys: $p<0.01$, $f^2=0.05$). On the other hand, the Family Affluence Scale and the Apgar score were not associated with AP in girls ($p=0.09$, $f^2=0.01$ and $p=0.31$, $f^2=0.00$, respectively). However, this association did occur in boys with a small effect size ($p=0.046$, $f^2=0.01$ and $p=0.001$, $f^2=0.03$). Regarding the social network variables, the association between AP and popularity was positive, with a small effect size in girls ($p<0.01$, $f^2=0.03$). A positive association was found between AP and the academic performance of friends, presenting a large effect size in girls ($p<0.01$, $f^2=0.38$) and boys ($p<0.01$, $f^2=0.40$). Similarly, it occurred with network size ($p=0.01$, $f^2=0.01$, for girls, and $p=0.019$, $f^2=0.01$, for boys), cluster of friends ($p=0.04$, $f^2=0.01$, for girls) and centrality ($p=0.02$, $f^2=0.01$ for girls, and $p<0.01$, $f^2=0.06$, for boys). Network variables such as homophily and network density were not associated with PA in girls ($p=0.83$, $f^2=0.00$ and $p=0.34$, $f^2=0.00$, respectively), but in boys, showing a small effect size ($p=0.002$, $f^2=0.02$ and $p<0.01$, $f^2=0.04$, respectively). For their part, social activity and reciprocity were the only network variables that did not present an association with AP in girls or boys (Table 2).

In the analysis of the multivariate models of association with AP, the variables that obtained a p-value<0.25 in the bivariate associations were included, according to the Homer-Lemeshow criterion [38]. Thus, the analysis of these models showed a large effect size in adolescents of both sexes ($f^2=0.49$ in girls and $f^2=0.57$ in boys). Of the sociodemographic variables included, only a positive association was found between AP and Apgar score in boys ($p<0.01$). In the case of the network variables, a significant association of AP was found with popularity (girls: $p<0.01$; boys: $p=0.02$), the academic performance of friends (p<0.01 in both sexes), and cluster of friends ($p<0.1$ in both sexes); while the variable homophily was negatively associated with AP in boys ($p=0.01$) in this model (Table 3).

Table 1 Sample characteristics

Variables	Girls, n=425 (52.7%)	Boys, n=381 (47.3%)	*p*-value
Location	n (%)	n (%)	
Urban	338 (79.5)	299 (78.5)	0.714
Rural	87 (20.5)	82 (21.5)	
Family structure, n (%)			
Other	40 (9.4)	24 (6.3)	0.264
Single parent	106 (24.9)	98 (25.7)	
Nuclear	279 (65.6)	259 (68.0)	
	Mean (SD)	Mean (SD)	
Age	14.8 (1.3)	15 (1.4)	0.027
Family Affluence Scale	1.8 (1.5)	1.9 (1.7)	0.166
Apgar score	13.9 (4.5)	14.3 (3.7)	0.125
Academic performance	7.3 (0.7)	7.1 (0.7)	0.001
Network variables			
Social activity	8.9 (6.3)	8.9 (6.3)	0.965
Popularity	8.8 (4.6)	9 (4.5)	0.734
Reciprocity	0.42 (0.21)	0.38 (0.2)	0.008
Homophily	-0.03 (0.05)	-0.05 (0.06)	0.001
Academic performance of friends	7.3 (0.4)	7.3 (0.4)	0.005
Network size	12.4 (6.3)	12.7 (5.8)	0.480
Network density	50.8 (17.6)	47.3 (16.2)	0.003
Cluster of friends	91.7 (92.6)	91.6 (89.2)	0.996
Centrality	15.4 (21.0)	18.2 (20.3)	0.053

Discussion

The objective of this study was to analyze the relationship between academic performance (AP) and social network variables in adolescents. The results of the multivariate models indicated that some social network variables were significantly associated with AP; that is, links between social dynamics and adolescent school performance were demonstrated. For example, the study documents that popular students (those with higher friendship

Table 2 Bivariate associations of academic performance with sociodemographic and network variables

Variables	Girls			Boys		
	β (95% CI)	*p-value*	*Cohen's f²*	β (95% CI)	*p-value*	*Cohen's f²*
School location (Ref. Rural)	0.56 (0.40–0.71)*	0.00	0.12	0.45 (0.29–0.61)*	0.00	0.08
Family structure (Ref. Other)						
Single parent	-0.05 (-0.29–0.20)	0.72	0.00	-0.13 (-0.43–0.17)	0.39	0.00
Nuclear	-0.01 (-0.24–0.22)	0.93		-0.11 (-0.39–0.17)	0.44	
Age	-0.08 (-0.13 - -0.04)*	0.00	0.03	-0.10 (-0.15 - -0.06)*	0.00	0.05
Family Affluence Scale	0.04 (-0.01–0.08)	0.09	0.01	0.04 (0.001–0.08)*	0.046	0.01
Apgar score	0.01 (-0.01–0.02)	0.31	0.00	0.03 (0.01–0.05)*	0.001	0.03
Network variables						
Social activity	0.01 (-0.001–0.02)	0.08	0.01	0.01 (-0.002–0.02)	0.108	0.01
Popularity	0.03 (0.01–0.04)*	0.00	0.03	0.01 (-0.001–0.03)	0.060	0.01
Reciprocity	0.19 (-0.11–0.49)	0.21	0.00	0.20 (-0.15–0.54)	0.260	0.00
Homophily	-0.15 (-1.44–1.15)	0.83	0.00	-1.70 (-2.79 - -0.61)*	0.002	0.02
Academic performance of friends	0.84 (0.71–0.97)*	0.00	0.38	0.91 (0.77–1.06)*	0.000	0.40
Network size	0.01 (0.002–0.02)*	0.02	0.01	0.01 (0.002–0.03)*	0.019	0.01
Network density	-0.002 (-0.01–0.002)	0.34	0.00	-0.01 (-0.01 - -0.004)*	0.000	0.04
Cluster of friends	0.001 (0.001–0.01)*	0.04	0.01	0.003 (-0.00–0.001)	0.464	0.00
Centrality	0.004 (0.001–0.007)*	0.02	0.01	0.008 (0.005–0.011)*	0.000	0.06

* Statistically significant association ($p<0.05$)

Table 3 Multivariate associations of academic performance with sociodemographic and network variables

Variables	Girls			Boys		
	β (95% CI)	*p-value*	*Cohen's f²*	β (95% CI)	*p-value*	*Cohen's f²*
School location (Ref. Rural)	0.11 (-0.05–0.27)	0.19	0.49	0.01 (-0.15–0.17)	0.90	0.57
Family structure (Ref. Other)						
Single parent	----	----		----	----	
Nuclear	----	----		----	----	
Age	-0.03 (-0.07–0.011)	0.14		-0.04 (-0.08–0.01)	0.09	
Family Affluence Scale	-0.01 (-0.05–0.02)	0.48		0.01 (-0.03–0.04)	0.65	
Apgar score	----	----		0.02 (0.01–0.04)*	0.00	
Network variables						
Social activity	0.03 (-0.01–0.06)	0.13		0.01 (-0.01–0.03)	0.43	
Popularity	0.06 (0.02–0.11)*	0.00		0.04 (0.01–0.07)*	0.02	
Reciprocity	-0.03 (-0.47–0.42)	0.90		----	----	
Homophily	----	----		-1.27 (-2.21 - -0.34)*	0.01	
Academic performance of friends	0.77 (0.62–0.92)*	0.00		0.79 (0.63–0.95)*	0.00	
Network size	0.01 (-0.06–0.08)	0.78		-0.03 (-0.06–0.01)	0.11	
Network density	----	----		-0.01 (-0.01–0.0003)	0.07	
Cluster of friends	-0.004 (-0.008–0.0)	0.10		----	----	
Centrality	-0.003 (-0.009–0.0)	0.33		0.003 (-0.003–0.008)	0.32	

* Statistically significant association ($p<0.05$)

nominations received) had higher AP. This finding suggests that adequate AP is a socially valued attribute in school networks. In other words, acceptable AP may give the adolescent a certain status and visibility within these networks of friends. Although in previous studies, popularity had also been associated with negative attributes such as risk behaviors [39] and aggressive behaviors [40]. This indicated that popularity is a complex construct and depends on the social context in which it is manifested.

Another study finding was that friends' academic performance was reflected in adolescents' academic performance. This would indicate that the academic environment in the group of friends, whether adequate or deficient, seemed to influence adolescent performance in the same way as previously documented [41]. A group of friends is an important source of social support, and seeking help in the classroom promotes learning and social skills, leading to better academic performance in a group of friends. However, this process is influenced by the same academic and social environment [42] and by variables such as gender. In this regard, it has been pointed out that academic performance tends to be more

similar between same-sex and opposite-sex pairs [43]. This finding indicates that the social dynamics among the groups of friends represent the possibility of accessing necessary resources for school performance [44].

Another network parameter analyzed in the study was homophily, understood as the tendency to establish social bonds with similar people, an elementary principle of interpersonal relationships [27]. The study found that, in boys, students with higher AP tended to have more friends with similar AP (homophily). Previous studies have reported that students tend to nominate and be nominated by peers with similar academic performance [14, 45]. Likewise, it has been documented that homophily is present in schoolchildren with low school attendance and, consequently, with low academic performance [46]. Homophily can arise due to selection, socialization processes, or influence [47]. In this regard, a longitudinal study found that homophily in academic performance results from a selection process and not from influence [48]. Finally, although this study did not find an association between network size and reciprocity with academic performance, previous studies have documented these associations [49–51].

These findings highlight the complexity of social dynamics and interactions within school groups, and these results have implications for practice. The social agenda accompanying students in educational meetings could be used positively to enhance the achievement of learning objectives, favoring teaching models that emphasize social interaction, such as cooperative learning, group learning, or teamwork. The implications for research have to do with the need to reveal the effects of social network interventions on the academic performance of adolescents. Also, future studies may include other agents of socialization outside the school to have a complementary component of the social circle of adolescents.

The study has some weaknesses. First, since this is a cross-sectional design study, any inference of causality between network characteristics and academic performance is ruled out. Second, networks of school friends were analyzed in the study. Other socialization settings outside of school were not studied. Third, although academic performance was taken as the outcome variable, the association may be in the opposite direction; that is, academic performance is the factor that promotes the establishment of social bonds among friends. And fourth, we have analyzed the relationship between social network parameters and academic performance by applying egocentric network analysis. Perhaps a socio-centric approach could have yielded results showing the mutual influence between AP and network ties.

Conclusions

The study concludes that the variables popularity, the academic performance of friends, and cluster of friends were positively associated with academic performance in girls and boys, and that homophily and network size were negatively associated with AP in boys. These findings highlight the need to consider the configuration of social networks of friends within the classroom and its relationship with academic performance. Intervention studies are also required to reveal the effects of social networks on academic performance.

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The data supporting this study's findings are available from the corresponding author, CA-P, upon reasonable request.

Authors' contributions
L-SM, A-PCM, P-PJ, and L-GL: Conception, acquisition, analysis, and interpretation of data. E-L C, PJ, W-FW, and P-VF: Conception and acquisition of data.All authors contributed to writing- original draft preparation and approved the submitted version.

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Data Availability
The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

Declarations

Competing interests
Authors declare that they have no competing interests.

Ethics approval and consent to participate
All methods were performed following the relevant guidelines and regulations [52]. The study protocol was approved by an ethics committee of Universidad de Antioquia (No. 2017-021). All participants provided informed assent and informed consent from parents.

Consent for publication
Not applicable.

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References

1. Thuong N, Vi N, Linh L. Determinants of academic performance of pupils in Vietnam. Am J Educ Res. 2019;7(5):360–8. https://doi.org/10.12691/education-7-5-4.
2. Barrios M, Frías M. Factors that influence development and school achievement on high school youth. Rev Colomb Psicol. 2016;25(1):63–82. https://doi.org/10.15446/rcp.v25n1.46921.
3. Castellanos-Páez V, Latorre-Velásquez D, Mateus-Gómez S, Navarro-Roldán C. Modelo explicativo del desempeño académico desde la autoeficacia y los problemas de conducta. Rev Colomb de Psicol. 2017;26(1):149–61. https://doi.org/10.15446/rcp.v26n1.56221.
4. Agasisti T, Zoido P. Comparing the efficiency of schools through international benchmarking: results from an empirical analysis of OECD PISA 2012 data. Educ Res. 2018;47(6):352–62. https://doi.org/10.3102/0013189X18777495.
5. Organisation for. Economic Co-operation and Development. PISA 2018 Database. 2018.

6. Francis B, Babu S. Predicting academic performance of students using a hybrid data mining approach. J Med Syst. 2019;43(162):1–15. https://doi.org/10.1007/s10916-019-1295-4.
7. Considine G, Zappalà G. The influence of social and economic disadvantage in the academic performance of school students in Australia. J Sociol. 2002;38(2):129–48. https://doi.org/10.1177/1440783302128756543.
8. Casanova P, García-Linares M, de la Torre M, Carpio M. Influence of family and socio-demographic variables on students with low academic achievement. Educ Psychol. 2005;25(4):423–35. https://doi.org/10.1080/01443410500041888.
9. Baños R, Baena-Extremera A, Granero-Gallegos A. The relationships between high school subjects in terms of school satisfaction and academic performance in mexican adolescents. Int J Environ Res Public Health. 2019;16(18). https://doi.org/10.3390/ijerph16183494.
10. Sawka K, McCormack G, Nettel-Aguirre A, Swanson K. Associations between aspects of friendship networks and dietary behavior in youth: findings from a systematized review. Eat Behav. 2015;18:7–15. https://doi.org/10.1016/j.eatbeh.2015.03.002.
11. Marks J, de la Haye K, Barnett L, Allender S. Friendship network characteristics are associated with physical activity and sedentary behavior in early adolescence. PLoS ONE. 2016;10(12):e0145344. https://doi.org/10.1371/journal.pone.0145344.
12. Vaquera E, Kao G. Do you like me as much as I like you? Friendship reciprocity and its effects on school outcomes among adolescents. Soc Sci Res. 2008;37(1):55–72. https://doi.org/10.1016/j.ssresearch.2006.11.002.
13. Riegle-Crumb C, Farkas G, Muller C. The role of gender and friendship in advanced course taking. Sociol Educ. 2006;79(3):206–28. https://doi.org/10.1177/003804070607900302.
14. Palacios D, Dijkstra J, Villalobos C, Treviño E, Berger C, Huisman M, et al. Classroom ability composition and the role of academic performance and school misconduct in the formation of academic and friendship networks. J Sch Psychol. 2019;74:58–73. https://doi.org/10.1016/j.jsp.2019.05.006.
15. Lessard L, Juvonen J. Losing and gaining friends: does friendship instability compromise academic functioning in middle school? J Sch Psychol. 2018;69:143–53. https://doi.org/10.1016/j.jsp.2018.05.003.
16. DeLay D, Zhang L, Hanish LD, Miller CF, Fabes RA, Martin CL, et al. Peer influence on academic performance: a social network analysis of social-emotional intervention effects. Prev Sci. 2016;17(8):903–13. https://doi.org/10.1007/s11121-016-0678-8.
17. Berkman L, Glass T. Social integration, social networks, social support, and health. In: Berkman L, Kawachi I, editors. Social epidemiology. New York: Oxford University Press; 2000. pp. 137–73.
18. Shoham DA, Hammond R, Rahmandad H, Wang Y, Hovmand P. Modeling social norms and social influence in obesity. Curr Epidemiol Rep. 2015;2(1):71–9. https://doi.org/10.1007/s40471-014-0032-2.
19. Hadiwijaya H, Klimstra TA, Vermunt JK, Branje SJT, Meeus WHJ. On the development of harmony, turbulence, and independence in parent–adolescent relationships: a five-wave longitudinal study. J Youth Adolesc. 2017;46(8):1772–88. https://doi.org/10.1007/s10964-016-0627-7.
20. Umberson D, Crosnoe R, Reczek C. Social relationships and health behavior across life course. Annu Rev Sociol. 2010;36:139–57. https://doi.org/10.1146/annurev-soc-070308-120011.
21. Rambaran JA, Hopmeyer A, Schwartz D, Steglich C, Badaly D, Veenstra R. Academic functioning and peer influences: a short-term longitudinal study of network-behavior dynamics in middle adolescence. Child Dev. 2017;88(2):523–43. https://doi.org/10.1111/cdev.12611.
22. Benner AD. Latino adolescents' loneliness, academic performance, and the buffering nature of friendships. J Youth Adolesc. 2011;40(5):556–67. https://doi.org/10.1007/s10964-010-9561-2.
23. Wentzel KR. Peer relationships, motivation, and academic performance at school. In: Elliot AJ, Dweck CS, Yeager DS, editors. Handbook of competence and motivation: theory and application. The Guilford Press; 2017. pp. 586–603.
24. Carrington PJ, Scott J, Wasserman S. Models and methods in social network analysis. Cambridge, UK: Cambridge University Press; 2005.
25. Valente T. Social networks and health. Models, methods, and applications. New York, NY: Oxford University Press; 2010.
26. Robins G. Doing social network research: network-based research design for social scientists. SAGE Publications; 2015.
27. McPherson M, Smith-Lovin L, Cook J. Birds of a feather: Homophily in social networks. Annu Rev Sociol. 2001;27(1):415–44. https://doi.org/10.1146/annurev.soc.27.1.415.
28. Carolan B. Social network analysis and education: theory, methods & applications. Thousand Oaks, California: SAGE Publications; 2014.
29. Ducoing-Watty P, Rojas-Moreno I. Secondary education in the latin american context: considerations based on the link between educational policy and the curriculum. Rev Mex Investig Educ. 2017;22(72):32–56. http://www.rmie.mx/.
30. Campo-Ariasa A, Caballero-Domínguez CC. Análisis factorial confirmatorio del cuestionario de APGAR familiar. Rev Colomb Psiquiatr. 2021;50(4):234–7. https://doi.org/10.1016/j.rcp.2020.01.003.
31. Currie C, Elton R, Todd J, Platt S. Indicators of socioeconomic status for adolescents: the WHO Health Behaviour in School-aged children Survey. Health Educ Res. 1997;12(3):385–97. https://doi.org/10.1093/her/12.3.385.
32. Boyce W, Torsheim T, Currie C, Zambon A. The family affluence scale as a measure of national wealth: validation of an adolescent self-report measure. Soc Indic Res. 2006;78:473–87. https://doi.org/10.1007/s11205-005-1607-6.
33. Fitzgerald A, Fitzgerald N, Aherne C. Do peers matter? A review of peer and/or friends' influence on physical activity among american adolescents. J Adolesc. 2012;35(4):941–58. https://doi.org/10.1016/j.adolescence.2012.01.002.
34. Perry B, Pescosolido B, Borgatti S. Egocentric network analysis. Foundations, methods, and models. UK: Cambridge University Press Cambridge; 2018.
35. Templeton GF. A two-step approach for transforming continuous variables to normal: implications and recommendations for IS research. Commun Assoc Inf Syst. 2011;28(4). https://doi.org/10.17705/1CAIS.02804.
36. Cohen J. Statistical power analysis for the behavioral sciences. 2nd ed. Hillsdale, NJ: Erlbaum; 1988.
37. Borgatti S. In: Everett M, Freeman L, editors. Ucinet for Windows: Software for social network analysis. Harvard, MA, United States: Analytic Technologies; 2002.
38. Hosmer D, Lemeshow S. Applied logistic regression. New York: Wiley; 1989.
39. Prinstein M, Choukas-Bradley S, Helms S, Brechwald W, Rancourt D. High peer popularity longitudinally predicts adolescent health risk behavior, or does it?: an examination of linear and quadratic associations. J Pediatr Psychol. 2011;36(9):980–90. https://doi.org/10.1093/jpepsy/jsr053.
40. Schwartz D, Gorman A, Nakamoto J, McKay T. Popularity, social acceptance, and aggression in adolescent peer groups: links with academic performance and school attendance. Dev Psychol. 2006;42(6):1116–27. https://doi.org/10.1037/0012-1649.42.6.1116.
41. Carman K, Zhang L. Classroom peer effects and academic achievement: evidence from a chinese middle school. China Econ Rev. 2012;23(2):223–37. https://doi.org/10.1016/j.chieco.2011.10.004.
42. Ivaniushina V, Lushin V, Alexandrov D. Academic help seeking among russian minority and non-minority adolescents: a social capital outlook. Learn Individ Differ. 2016;50:283–90. https://doi.org/10.1016/j.lindif.2016.07.016.
43. Liem GAD, Martin AJ. Peer relationships and adolescents' academic and non-academic outcomes: same-sex and opposite-sex peer effects and the mediating role of school engagement. Br J Educ Psychol. 2011;81(2):183–206. https://doi.org/10.1111/j.2044-8279.2010.02013.x.
44. Uzezi J, Deya G. Relationship between peer group influence and students' academic achievement in Chemistry at secondary school level. Am J Educ Res. 2017;5(4):350–6. https://doi.org/10.12691/education-5-4-2.
45. Gremmen MC, Dijkstra JK, Steglich C, Veenstra R. First selection, then influence: developmental differences in friendship dynamics regarding academic achievement. Dev Psychol. 2017;53(7):1356–70. https://doi.org/10.1037/dev0000314.
46. Kassarnig V, Bjerre-Nielsen A, Mones E, Lehmann S, Lassen D. Class attendance, peer similarity, and academic performance in a large field study. PLoS ONE. 2017;12(11):e0187078. https://doi.org/10.1371/journal.pone.0187078.
47. Kandel D. Homophily, selection, and socialization in adolescent friendships. Am J Sociol. 1978;84(2):427–36. https://doi.org/10.1086/226792.
48. Smirnov I, Thurner S. Formation of homophily in academic performance: students change their friends rather than performance. PLoS ONE. 2017;12(8):e0183473. https://doi.org/10.1371/journal.pone.0183473.
49. Altermatt ER, Pomerantz EM. The development of competence-related and motivational beliefs: an investigation of similarity and influence among friends. J Educ Psychol. 2003;95(1):111–23. https://doi.org/10.1037/0022-0663.95.1.111.
50. Fujiyama H, Kamo Y, Schafer M. Peer effects of friend and extracurricular activity networks on students' academic performance. Soc Sci Res. 2021;97:102560. https://doi.org/10.1016/j.ssresearch.2021.102560.
51. Kingery J, Erdley C, Marshall K. Peer acceptance and friendship as predictors of early adolescents' adjustment across the middle school transition. Merrill Palmer Q. 2011;57(3):215–43. https://doi.org/10.1353/mpq.2011.0012.

52. World Medical Association. Declaration of Helsinki: medical research involving human subjects. JAMA. 2013;310(20):2191–4. https://doi.org/10.1001/jama.2013.281053.

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Academic performance and social networks of adolescents in a caribbean city in Colombia

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Abstract

Background Social factors and networks of friends can influence an adolescent's behavior, including academic performance (AP) in school. This study aimed to analyze the relationship between AP and adolescents' social networks in a Caribbean city in Colombia.

Methods A cross-sectional study was carried out with 806 schoolchildren from 12 to 17 years old of both sexes (52.7% girls), selected by multi-stage sampling from schools in the rural and urban areas of the city of Montería, Colombia. The AP was obtained from the school records; the sociodemographic variables included the location of the school (rural or urban), family structure, family functioning (Apgar score), and family affluence scale. Social network variables included social activity, popularity, reciprocity, homophily, friends' academic performance, network size, network density, cluster of friends, and centrality.

Results The AP was inversely associated with the Apgar score in boys. No associations of AP with the school location, family structure, family affluence scale, and age were observed. In social network variables, AP was positively associated with popularity and friends' academic performance in girls and boys, and negatively associated with homophily in boys.

Conclusions AP was associated with social network variables. These results could help implement interventions to improve adolescents' social environment and AP.

Keywords Education, Friendship, Social Network Analysis

Background

Academic performance (AP) of students is an essential indicator of intellectual health, and it has been one of the leading indicators to evaluate the educational development of a country; therefore, improving AP levels is considered a fundamental part of the development of human capital in all nations [1]. Although AP is a concept that provokes debate (i.e., by its definition, factors that influence its development and evaluation), the AP expresses the progress or "performance" of students in a particular area or academic situation through a grade which is assigned based on an evaluation system [2, 3]. In this context, standardized academic tests employed to evaluate

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the AP level serve as an input to draw educational policies and strategies and compare the level of educational development between countries [4]. In this sense, there is concern about the educational level of Latin America because the AP (i.e., reading, mathematics, and science) is inferior compared to the AP average of countries of the Organisation for Economic Co-operation and Development (OECD) [5]. This panorama imposes the need to evaluate the factors associated with AP under the sociodemographic conditions of Latin American countries, which contributes to the management and development of strategies to improve the AP of students [6].

As a complex phenomenon, AP is influenced by multiple factors, such as personal, economic, educational, and social aspects [7–9]. Particularly, previous research has indicated that the social networks of friends may influence the behaviors of adolescents (e.g., alcohol consumption, tobacco, and physical activity) [10, 11], including the AP [12–16]. Frequent social interaction within groups enables influence through encouragement, advice, and group pressure. Social interaction is also an important element for adolescents because, within these networks, they find affection, information, and recognition. Simultaneously, they create new social connections, shape subcultures and behavioral norms [17]. Children and adolescents spend much of their lives interacting with their peers at school. In these interactions, social networks are forged, norms are structured, and behaviors are influenced [18]. Particularly during adolescence, when family ties gradually become less influential [19] and the network of friends is expanded [20]. These friendly relationships with peers are also related to academic performance [16], relationships that can be positive or negative [21]. Previous research has indicated that belonging to a group of friends can positively serve academic success; schoolchildren who perceive themselves as socially isolated have lower academic performance than those who feel supported by their friends [22]. In this sense, adolescents who enjoy positive relationships with their peers tend to excel academically in response to various mechanisms of social influence [23]. Therefore, school social structures are valuable for school performance and adaptation. The social relationships established and sustained within the school represent one of the most important facets of the schooling process.

Social network analysis is a sound theoretical and analytical tool to investigate the structure of the group of friends with whom the individual interacts in socialization environments [24], such as at school. This tool helps to analyze the network actors' connection patterns, allowing the identification of different sociometric attributes of the structure of the social network of friends [25]. Social network analysis also enables the use of network data to predict the strength of ties between individuals through those attributes and the level of influence exerted on individual behaviors [26]. For example, social network analysis enables identifying those actors who tend to receive a more significant number of friendship nominations within the network (popular actors) [25], and those who tend to make more friendship nominations, an indicator of high social activity. As well, the degree of similarity between the individuals that are interconnected in the network, which is known as homophily [27]. It is also possible to identify network size and density, clusters of friends, and actors with a centralized or peripheral position within the network, among other sociometric parameters [25].

Knowing the structure of the social network is critical to understanding the dynamics of collective entities, such as social support, social influence, or social capital, entities of particular interest for school performance [28]. By applying social network analysis to explore a complex phenomenon such as AP in adolescence, the understanding of AP is broadened from a multidisciplinary perspective, which could contribute to formulating educational policies and strategies. However, in Latin American countries, such as Colombia, which face critical educational quality challenges [29], studies of social networks in aspects related to school performance are scarce. Considering these aspects, we hypothesize that network measures will be associated with AP. Therefore, the purpose of this study was to analyze the association between AP with social networks in adolescents from a Caribbean city in Colombia.

Methodology

Design and sample

This study is part of the research project "Determinants of academic achievement, health, and wellness in school-age children" (De-Redes). The study was conducted with a cross-sectional design in adolescents aged 12 to 17 years from a Caribbean city in Colombia. The study complied with the guidelines stipulated in the Declaration of Helsinki, and its protocol was approved by an ethics committee of Universidad de Antioquia (No. 2017-021). Multi-stage sampling was carried out in a sample frame of around 80,000 schoolchildren registered in 63 public schools in the city for 2018 (80% in the urban sector), of which 30% were schoolchildren in grades 7 and 10. Ten schools were randomly selected, and two did not allow access to the students' academic performance records. In the schools included, one classroom was randomly selected in each grade (7th through 10th), resulting in 32 classrooms in the eight schools. Students from these classrooms were invited to participate in the study (n=1113) and received informed assent, and their parents received informed consent. Students who returned the signed informed assent and consent forms were

included in the study. Students with missing data were excluded from the analysis. The total study sample consisted of 806 adolescents.

Measurements

Academic performance The academic performance variable was obtained by consulting school records. In them, a scale from 1 to 10 was used to assess academic performance, and for this study, the academic grade point averages were obtained in all school courses.

Sociodemographic variables: The school's location (urban or rural), the sex, and the age of each student were recorded. For the family aspects, the students reported the type of family structure taking into account three categories: nuclear family, made up of both parents; single-parent family, for those students who reported living with one of the parents; and another family structure, for those families other than nuclear and single-parent families. Additionally, participants filled out the validated Apgar instrument, which has good internal consistency with Cronbach's alpha coefficient of 0.81 and McDonald's omega coefficient of 0.82 [30]. The student's perception of the functioning of the family in five dimensions was assessed (one item for each one): adaptation, cooperation, growth, affectivity, and problem-solving. Each dimension had a score from 0 to 5, and the final score ranged from 0 to 25. The Family Affluence Scale (FAS) was used to obtain a proxy of economic position [31]. FAS has good criterion validity reported in previous studies (Spearman correlation=0.87 and kappa index=0.57) [32]. This scale is composed of four questions inquiring about the number of cars and computers in the home, internet accessibility at home, and whether the student has his own bedroom, with a scale of none=0; one=1; two or more=2. The total score ranged from 0 to 8.

Social network variables To identify the social network of friends, the students received a list with the names of their classmates to nominate their best friends within the classroom, with no limit on the number of nominations. The participants were instructed that best friends were those with whom they have a close friendship, share activities frequently, and have common interests in some activities. This specification was based on the recommendation made in the friendship literature [33] to distinguish between best friends, friends, and peers. With these nominations, an egocentric analysis of the social network of friends was carried out, calculating the following social network variables, considered of utility in this type of network analysis [34].

1) *Social activity* reflects the social expansiveness of the student and is extracted by counting the number of nominations made.
2) *Popularity* indicates the level of reputation of the student within the social network of friends and is extracted by counting the number of nominations received.
3) *Reciprocity* reflects the level of closeness of friendship ties and is based on the percentage of reciprocal nominations; that is, when A nominates B and B nominates A.
4) *Homophily* reflects the student's tendency to nominate friends with whom the level of academic performance is shared (similarity) and is defined as the average of the absolute differences in the individual AP and the AP of their friends.
5) *Average academic performance of friends* indicated the magnitude of academic performance surrounding the student and was calculated by averaging the academic performance of the student's friends.
6) *Network size* reflected the breadth of the social network of friends and was calculated by counting the number of classmates with whom the student has friendship ties.
7) *Network density* indicated the degree of connectivity within the personal network of friends and was calculated by dividing the network size by the number of potential connections.
8) *Cluster of friends* reflected the student's tendency to form friendship triangles and were defined by the number of times the student was part of triads of friends.
9) *Centrality* indicated the level of importance of the actor within the network in terms of connectivity. It was calculated by counting the number of times the student was on the shortest route between two members of the network of friends.

Since all these network variables had a non-normal distribution, they were transformed using the two-step approach [35].

Analysis plan

Data normality was tested by the Kolmoronov-Smirnov test. Descriptive statistics were stratified by sex. Proportions, means, and standard deviation were analyzed using the chi-square test for categorical variables and the t-test for continuous variables. Associations between social network variables and academic performance were analyzed with bivariate and multivariate linear regression models stratified by gender. Confidence intervals (95%) were estimated; the level of significance was established at p-value<0.05, and the effect size was calculated based on Cohen's f^2 [36], both in bivariate and multivariate associations. The Homer-Lemeshow criterion [37] was applied for the multivariate models so that the variables with p-values<0.25 in the bivariate associations were included in the multivariate

linear regression models. Social network variables were obtained using the UCINET program [37]. The SPSS Statistical Program for Windows v.24 (IBM Corp., Armonk, N.Y., USA) was used to conduct the analyses.

Results

In this study, the sample consisted of 806 adolescents (12 to 17 years old) of both sexes (n=425, 52.7% girls), belonging to schools in urban and rural areas (n=637, 79% urban) of the city of Monteria, Colombia. Most of these students reported that they belonged to a nuclear-type family structure (n=538, 66.75%), with no differences between boys and girls in the distribution of the different types of family structure. The score on the family affluence scale and family functioning (Apgar score) showed no difference according to sex ($p=0.166$ and $p=0.125$, respectively). However, girls had higher AP than boys ($p=0.001$). Regarding the variables of the social network, differences were found between boys and girls in reciprocity ($p=0.008$), homophily ($p=0.001$), the academic performance of friends ($p=0.005$), and network density ($p=0.003$). No differences were found between boys and girls in the other network variables. These results are presented in Table 1.

The bivariate association analysis between AP and sociodemographic variables showed that there was an association between AP and the school location (i.e., rural area as reference), with a small effect size, in adolescents of both sexes (girls: $p<0.01$, $f^2=0.12$, boys: $p<0.01$, $f^2=0.08$). Considering family structure (i.e., 'other' as a reference), no significant association was found between AP and single-parent or nuclear structure in girls or boys. In contrast, age was inversely associated with AP with a small effect size in both sexes (girls: $p<0.01$, $f^2=0.03$; boys: $p<0.01$, $f^2=0.05$). On the other hand, the Family Affluence Scale and the Apgar score were not associated with AP in girls ($p=0.09$, $f^2=0.01$ and $p=0.31$, $f^2=0.00$, respectively). However, this association did occur in boys with a small effect size ($p=0.046$, $f^2=0.01$ and $p=0.001$, $f^2=0.03$). Regarding the social network variables, the association between AP and popularity was positive, with a small effect size in girls ($p<0.01$, $f^2=0.03$). A positive association was found between AP and the academic performance of friends, presenting a large effect size in girls ($p<0.01$, $f^2=0.38$) and boys ($p<0.01$, $f^2=0.40$). Similarly, it occurred with network size ($p=0.01$, $f^2=0.01$, for girls, and $p=0.019$, $f^2=0.01$, for boys), cluster of friends ($p=0.04$, $f^2=0.01$, for girls) and centrality ($p=0.02$, $f^2=0.01$ for girls, and $p<0.01$, $f^2=0.06$, for boys). Network variables such as homophily and network density were not associated with PA in girls ($p=0.83$, $f^2=0.00$ and $p=0.34$, $f^2=0.00$, respectively), but in boys, showing a small effect size ($p=0.002$, $f^2=0.02$ and $p<0.01$, $f^2=0.04$, respectively). For their part, social activity and reciprocity were the only network variables that did not present an association with AP in girls or boys (Table 2).

In the analysis of the multivariate models of association with AP, the variables that obtained a p-value<0.25 in the bivariate associations were included, according to the Homer-Lemeshow criterion [38]. Thus, the analysis of these models showed a large effect size in adolescents of both sexes ($f^2=0.49$ in girls and $f^2=0.57$ in boys). Of the sociodemographic variables included, only a positive association was found between AP and Apgar score in boys ($p<0.01$). In the case of the network variables, a significant association of AP was found with popularity (girls: $p<0.01$; boys: $p=0.02$), the academic performance of friends (p<0.01 in both sexes), and cluster of friends ($p<0.1$ in both sexes); while the variable homophily was negatively associated with AP in boys ($p=0.01$) in this model (Table 3).

Table 1 Sample characteristics

Variables	Girls, n=425 (52.7%)	Boys, n=381 (47.3%)	*p*-value
Location	n (%)	n (%)	
Urban	338 (79.5)	299 (78.5)	0.714
Rural	87 (20.5)	82 (21.5)	
Family structure, n (%)			
Other	40 (9.4)	24 (6.3)	0.264
Single parent	106 (24.9)	98 (25.7)	
Nuclear	279 (65.6)	259 (68.0)	
	Mean (SD)	Mean (SD)	
Age	14.8 (1.3)	15 (1.4)	0.027
Family Affluence Scale	1.8 (1.5)	1.9 (1.7)	0.166
Apgar score	13.9 (4.5)	14.3 (3.7)	0.125
Academic performance	7.3 (0.7)	7.1 (0.7)	0.001
Network variables			
Social activity	8.9 (6.3)	8.9 (6.3)	0.965
Popularity	8.8 (4.6)	9 (4.5)	0.734
Reciprocity	0.42 (0.21)	0.38 (0.2)	0.008
Homophily	-0.03 (0.05)	-0.05 (0.06)	0.001
Academic performance of friends	7.3 (0.4)	7.3 (0.4)	0.005
Network size	12.4 (6.3)	12.7 (5.8)	0.480
Network density	50.8 (17.6)	47.3 (16.2)	0.003
Cluster of friends	91.7 (92.6)	91.6 (89.2)	0.996
Centrality	15.4 (21.0)	18.2 (20.3)	0.053

Discussion

The objective of this study was to analyze the relationship between academic performance (AP) and social network variables in adolescents. The results of the multivariate models indicated that some social network variables were significantly associated with AP; that is, links between social dynamics and adolescent school performance were demonstrated. For example, the study documents that popular students (those with higher friendship

Table 2 Bivariate associations of academic performance with sociodemographic and network variables

Variables	Girls			Boys		
	β (95% CI)	*p-value*	*Cohen's f²*	β (95% CI)	*p-value*	*Cohen's f²*
School location (Ref. Rural)	0.56 (0.40–0.71)*	0.00	0.12	0.45 (0.29–0.61)*	0.00	0.08
Family structure (Ref. Other)						
Single parent	-0.05 (-0.29–0.20)	0.72	0.00	-0.13 (-0.43–0.17)	0.39	0.00
Nuclear	-0.01 (-0.24–0.22)	0.93		-0.11 (-0.39–0.17)	0.44	
Age	-0.08 (-0.13 - -0.04)*	0.00	0.03	-0.10 (-0.15 - -0.06)*	0.00	0.05
Family Affluence Scale	0.04 (-0.01–0.08)	0.09	0.01	0.04 (0.001–0.08)*	0.046	0.01
Apgar score	0.01 (-0.01–0.02)	0.31	0.00	0.03 (0.01–0.05)*	0.001	0.03
Network variables						
Social activity	0.01 (-0.001–0.02)	0.08	0.01	0.01 (-0.002–0.02)	0.108	0.01
Popularity	0.03 (0.01–0.04)*	0.00	0.03	0.01 (-0.001–0.03)	0.060	0.01
Reciprocity	0.19 (-0.11–0.49)	0.21	0.00	0.20 (-0.15–0.54)	0.260	0.00
Homophily	-0.15 (-1.44–1.15)	0.83	0.00	-1.70 (-2.79 - -0.61)*	0.002	0.02
Academic performance of friends	0.84 (0.71–0.97)*	0.00	0.38	0.91 (0.77–1.06)*	0.000	0.40
Network size	0.01 (0.002–0.02)*	0.02	0.01	0.01 (0.002–0.03)*	0.019	0.01
Network density	-0.002 (-0.01–0.002)	0.34	0.00	-0.01 (-0.01 - -0.004)*	0.000	0.04
Cluster of friends	0.001 (0.001–0.01)*	0.04	0.01	0.003 (-0.00–0.001)	0.464	0.00
Centrality	0.004 (0.001–0.007)*	0.02	0.01	0.008 (0.005–0.011)*	0.000	0.06

* Statistically significant association ($p<0.05$)

Table 3 Multivariate associations of academic performance with sociodemographic and network variables

Variables	Girls			Boys		
	β (95% CI)	*p-value*	*Cohen's f²*	β (95% CI)	*p-value*	*Cohen's f²*
School location (Ref. Rural)	0.11 (-0.05–0.27)	0.19	0.49	0.01 (-0.15–0.17)	0.90	0.57
Family structure (Ref. Other)						
Single parent	----	----		----	----	
Nuclear	----	----		----	----	
Age	-0.03 (-0.07–0.011)	0.14		-0.04 (-0.08–0.01)	0.09	
Family Affluence Scale	-0.01 (-0.05–0.02)	0.48		0.01 (-0.03–0.04)	0.65	
Apgar score	----	----		0.02 (0.01–0.04)*	0.00	
Network variables						
Social activity	0.03 (-0.01–0.06)	0.13		0.01 (-0.01–0.03)	0.43	
Popularity	0.06 (0.02–0.11)*	0.00		0.04 (0.01–0.07)*	0.02	
Reciprocity	-0.03 (-0.47–0.42)	0.90		----	----	
Homophily	----	----		-1.27 (-2.21 - -0.34)*	0.01	
Academic performance of friends	0.77 (0.62–0.92)*	0.00		0.79 (0.63–0.95)*	0.00	
Network size	0.01 (-0.06–0.08)	0.78		-0.03 (-0.06–0.01)	0.11	
Network density	----	----		-0.01 (-0.01–0.0003)	0.07	
Cluster of friends	-0.004 (-0.008–0.0)	0.10		----	----	
Centrality	-0.003 (-0.009–0.0)	0.33		0.003 (-0.003–0.008)	0.32	

* Statistically significant association ($p<0.05$)

nominations received) had higher AP. This finding suggests that adequate AP is a socially valued attribute in school networks. In other words, acceptable AP may give the adolescent a certain status and visibility within these networks of friends. Although in previous studies, popularity had also been associated with negative attributes such as risk behaviors [39] and aggressive behaviors [40]. This indicated that popularity is a complex construct and depends on the social context in which it is manifested.

Another study finding was that friends' academic performance was reflected in adolescents' academic performance. This would indicate that the academic environment in the group of friends, whether adequate or deficient, seemed to influence adolescent performance in the same way as previously documented [41]. A group of friends is an important source of social support, and seeking help in the classroom promotes learning and social skills, leading to better academic performance in a group of friends. However, this process is influenced by the same academic and social environment [42] and by variables such as gender. In this regard, it has been pointed out that academic performance tends to be more

similar between same-sex and opposite-sex pairs [43]. This finding indicates that the social dynamics among the groups of friends represent the possibility of accessing necessary resources for school performance [44].

Another network parameter analyzed in the study was homophily, understood as the tendency to establish social bonds with similar people, an elementary principle of interpersonal relationships [27]. The study found that, in boys, students with higher AP tended to have more friends with similar AP (homophily). Previous studies have reported that students tend to nominate and be nominated by peers with similar academic performance [14, 45]. Likewise, it has been documented that homophily is present in schoolchildren with low school attendance and, consequently, with low academic performance [46]. Homophily can arise due to selection, socialization processes, or influence [47]. In this regard, a longitudinal study found that homophily in academic performance results from a selection process and not from influence [48]. Finally, although this study did not find an association between network size and reciprocity with academic performance, previous studies have documented these associations [49–51].

These findings highlight the complexity of social dynamics and interactions within school groups, and these results have implications for practice. The social agenda accompanying students in educational meetings could be used positively to enhance the achievement of learning objectives, favoring teaching models that emphasize social interaction, such as cooperative learning, group learning, or teamwork. The implications for research have to do with the need to reveal the effects of social network interventions on the academic performance of adolescents. Also, future studies may include other agents of socialization outside the school to have a complementary component of the social circle of adolescents.

The study has some weaknesses. First, since this is a cross-sectional design study, any inference of causality between network characteristics and academic performance is ruled out. Second, networks of school friends were analyzed in the study. Other socialization settings outside of school were not studied. Third, although academic performance was taken as the outcome variable, the association may be in the opposite direction; that is, academic performance is the factor that promotes the establishment of social bonds among friends. And fourth, we have analyzed the relationship between social network parameters and academic performance by applying egocentric network analysis. Perhaps a socio-centric approach could have yielded results showing the mutual influence between AP and network ties.

Conclusions

The study concludes that the variables popularity, the academic performance of friends, and cluster of friends were positively associated with academic performance in girls and boys, and that homophily and network size were negatively associated with AP in boys. These findings highlight the need to consider the configuration of social networks of friends within the classroom and its relationship with academic performance. Intervention studies are also required to reveal the effects of social networks on academic performance.

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Authors' contributions
L-SM, A-PCM, P-PJ, and L-GL: Conception, acquisition, analysis, and interpretation of data. E-L C, PJ, W-FW, and P-VF: Conception and acquisition of data.All authors contributed to writing- original draft preparation and approved the submitted version.

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Data Availability
The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

Declarations

Competing interests
Authors declare that they have no competing interests.

Ethics approval and consent to participate
All methods were performed following the relevant guidelines and regulations [52]. The study protocol was approved by an ethics committee of Universidad de Antioquia (No. 2017-021). All participants provided informed assent and informed consent from parents.

Consent for publication
Not applicable.

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References

1. Thuong N, Vi N, Linh L. Determinants of academic performance of pupils in Vietnam. Am J Educ Res. 2019;7(5):360–8. https://doi.org/10.12691/education-7-5-4.
2. Barrios M, Frías M. Factors that influence development and school achievement on high school youth. Rev Colomb Psicol. 2016;25(1):63–82. https://doi.org/10.15446/rcp.v25n1.46921.
3. Castellanos-Páez V, Latorre-Velásquez D, Mateus-Gómez S, Navarro-Roldán C. Modelo explicativo del desempeño académico desde la autoeficacia y los problemas de conducta. Rev Colomb de Psicol. 2017;26(1):149–61. https://doi.org/10.15446/rcp.v26n1.56221.
4. Agasisti T, Zoido P. Comparing the efficiency of schools through international benchmarking: results from an empirical analysis of OECD PISA 2012 data. Educ Res. 2018;47(6):352–62. https://doi.org/10.3102/0013189X18777495.
5. Organisation for. Economic Co-operation and Development. PISA 2018 Database. 2018.

6. Francis B, Babu S. Predicting academic performance of students using a hybrid data mining approach. J Med Syst. 2019;43(162):1–15. https://doi.org/10.1007/s10916-019-1295-4.
7. Considine G, Zappalà G. The influence of social and economic disadvantage in the academic performance of school students in Australia. J Sociol. 2002;38(2):129–48. https://doi.org/10.1177/1440783302128756543.
8. Casanova P, García-Linares M, de la Torre M, Carpio M. Influence of family and socio-demographic variables on students with low academic achievement. Educ Psychol. 2005;25(4):423–35. https://doi.org/10.1080/01443410500041888.
9. Baños R, Baena-Extremera A, Granero-Gallegos A. The relationships between high school subjects in terms of school satisfaction and academic performance in mexican adolescents. Int J Environ Res Public Health. 2019;16(18). https://doi.org/10.3390/ijerph16183494.
10. Sawka K, McCormack G, Nettel-Aguirre A, Swanson K. Associations between aspects of friendship networks and dietary behavior in youth: findings from a systematized review. Eat Behav. 2015;18:7–15. https://doi.org/10.1016/j.eatbeh.2015.03.002.
11. Marks J, de la Haye K, Barnett L, Allender S. Friendship network characteristics are associated with physical activity and sedentary behavior in early adolescence. PLoS ONE. 2016;10(12):e0145344. https://doi.org/10.1371/journal.pone.0145344.
12. Vaquera E, Kao G. Do you like me as much as I like you? Friendship reciprocity and its effects on school outcomes among adolescents. Soc Sci Res. 2008;37(1):55–72. https://doi.org/10.1016/j.ssresearch.2006.11.002.
13. Riegle-Crumb C, Farkas G, Muller C. The role of gender and friendship in advanced course taking. Sociol Educ. 2006;79(3):206–28. https://doi.org/10.1177/003804070607900302.
14. Palacios D, Dijkstra J, Villalobos C, Treviño E, Berger C, Huisman M, et al. Classroom ability composition and the role of academic performance and school misconduct in the formation of academic and friendship networks. J Sch Psychol. 2019;74:58–73. https://doi.org/10.1016/j.jsp.2019.05.006.
15. Lessard L, Juvonen J. Losing and gaining friends: does friendship instability compromise academic functioning in middle school? J Sch Psychol. 2018;69:143–53. https://doi.org/10.1016/j.jsp.2018.05.003.
16. DeLay D, Zhang L, Hanish LD, Miller CF, Fabes RA, Martin CL, et al. Peer influence on academic performance: a social network analysis of social-emotional intervention effects. Prev Sci. 2016;17(8):903–13. https://doi.org/10.1007/s11121-016-0678-8.
17. Berkman L, Glass T. Social integration, social networks, social support, and health. In: Berkman L, Kawachi I, editors. Social epidemiology. New York: Oxford University Press; 2000. pp. 137–73.
18. Shoham DA, Hammond R, Rahmandad H, Wang Y, Hovmand P. Modeling social norms and social influence in obesity. Curr Epidemiol Rep. 2015;2(1):71–9. https://doi.org/10.1007/s40471-014-0032-2.
19. Hadiwijaya H, Klimstra TA, Vermunt JK, Branje SJT, Meeus WHJ. On the development of harmony, turbulence, and independence in parent–adolescent relationships: a five-wave longitudinal study. J Youth Adolesc. 2017;46(8):1772–88. https://doi.org/10.1007/s10964-016-0627-7.
20. Umberson D, Crosnoe R, Reczek C. Social relationships and health behavior across life course. Annu Rev Sociol. 2010;36:139–57. https://doi.org/10.1146/annurev-soc-070308-120011.
21. Rambaran JA, Hopmeyer A, Schwartz D, Steglich C, Badaly D, Veenstra R. Academic functioning and peer influences: a short-term longitudinal study of network-behavior dynamics in middle adolescence. Child Dev. 2017;88(2):523–43. https://doi.org/10.1111/cdev.12611.
22. Benner AD. Latino adolescents' loneliness, academic performance, and the buffering nature of friendships. J Youth Adolesc. 2011;40(5):556–67. https://doi.org/10.1007/s10964-010-9561-2.
23. Wentzel KR. Peer relationships, motivation, and academic performance at school. In: Elliot AJ, Dweck CS, Yeager DS, editors. Handbook of competence and motivation: theory and application. The Guilford Press; 2017. pp. 586–603.
24. Carrington PJ, Scott J, Wasserman S. Models and methods in social network analysis. Cambridge, UK: Cambridge University Press; 2005.
25. Valente T. Social networks and health. Models, methods, and applications. New York, NY: Oxford University Press; 2010.
26. Robins G. Doing social network research: network-based research design for social scientists. SAGE Publications; 2015.
27. McPherson M, Smith-Lovin L, Cook J. Birds of a feather: Homophily in social networks. Annu Rev Sociol. 2001;27(1):415–44. https://doi.org/10.1146/annurev.soc.27.1.415.
28. Carolan B. Social network analysis and education: theory, methods & applications. Thousand Oaks, California: SAGE Publications; 2014.
29. Ducoing-Watty P, Rojas-Moreno I. Secondary education in the latin american context: considerations based on the link between educational policy and the curriculum. Rev Mex Investig Educ. 2017;22(72):32–56. http://www.rmie.mx/.
30. Campo-Ariasa A, Caballero-Domínguez CC. Análisis factorial confirmatorio del cuestionario de APGAR familiar. Rev Colomb Psiquiatr. 2021;50(4):234–7. https://doi.org/10.1016/j.rcp.2020.01.003.
31. Currie C, Elton R, Todd J, Platt S. Indicators of socioeconomic status for adolescents: the WHO Health Behaviour in School-aged children Survey. Health Educ Res. 1997;12(3):385–97. https://doi.org/10.1093/her/12.3.385.
32. Boyce W, Torsheim T, Currie C, Zambon A. The family affluence scale as a measure of national wealth: validation of an adolescent self-report measure. Soc Indic Res. 2006;78:473–87. https://doi.org/10.1007/s11205-005-1607-6.
33. Fitzgerald A, Fitzgerald N, Aherne C. Do peers matter? A review of peer and/or friends' influence on physical activity among american adolescents. J Adolesc. 2012;35(4):941–58. https://doi.org/10.1016/j.adolescence.2012.01.002.
34. Perry B, Pescosolido B, Borgatti S. Egocentric network analysis. Foundations, methods, and models. UK: Cambridge University Press Cambridge; 2018.
35. Templeton GF. A two-step approach for transforming continuous variables to normal: implications and recommendations for IS research. Commun Assoc Inf Syst. 2011;28(4). https://doi.org/10.17705/1CAIS.02804.
36. Cohen J. Statistical power analysis for the behavioral sciences. 2nd ed. Hillsdale, NJ: Erlbaum; 1988.
37. Borgatti S. In: Everett M, Freeman L, editors. Ucinet for Windows: Software for social network analysis. Harvard, MA, United States: Analytic Technologies; 2002.
38. Hosmer D, Lemeshow S. Applied logistic regression. New York: Wiley; 1989.
39. Prinstein M, Choukas-Bradley S, Helms S, Brechwald W, Rancourt D. High peer popularity longitudinally predicts adolescent health risk behavior, or does it?: an examination of linear and quadratic associations. J Pediatr Psychol. 2011;36(9):980–90. https://doi.org/10.1093/jpepsy/jsr053.
40. Schwartz D, Gorman A, Nakamoto J, McKay T. Popularity, social acceptance, and aggression in adolescent peer groups: links with academic performance and school attendance. Dev Psychol. 2006;42(6):1116–27. https://doi.org/10.1037/0012-1649.42.6.1116.
41. Carman K, Zhang L. Classroom peer effects and academic achievement: evidence from a chinese middle school. China Econ Rev. 2012;23(2):223–37. https://doi.org/10.1016/j.chieco.2011.10.004.
42. Ivaniushina V, Lushin V, Alexandrov D. Academic help seeking among russian minority and non-minority adolescents: a social capital outlook. Learn Individ Differ. 2016;50:283–90. https://doi.org/10.1016/j.lindif.2016.07.016.
43. Liem GAD, Martin AJ. Peer relationships and adolescents' academic and non-academic outcomes: same-sex and opposite-sex peer effects and the mediating role of school engagement. Br J Educ Psychol. 2011;81(2):183–206. https://doi.org/10.1111/j.2044-8279.2010.02013.x.
44. Uzezi J, Deya G. Relationship between peer group influence and students' academic achievement in Chemistry at secondary school level. Am J Educ Res. 2017;5(4):350–6. https://doi.org/10.12691/education-5-4-2.
45. Gremmen MC, Dijkstra JK, Steglich C, Veenstra R. First selection, then influence: developmental differences in friendship dynamics regarding academic achievement. Dev Psychol. 2017;53(7):1356–70. https://doi.org/10.1037/dev0000314.
46. Kassarnig V, Bjerre-Nielsen A, Mones E, Lehmann S, Lassen D. Class attendance, peer similarity, and academic performance in a large field study. PLoS ONE. 2017;12(11):e0187078. https://doi.org/10.1371/journal.pone.0187078.
47. Kandel D. Homophily, selection, and socialization in adolescent friendships. Am J Sociol. 1978;84(2):427–36. https://doi.org/10.1086/226792.
48. Smirnov I, Thurner S. Formation of homophily in academic performance: students change their friends rather than performance. PLoS ONE. 2017;12(8):e0183473. https://doi.org/10.1371/journal.pone.0183473.
49. Altermatt ER, Pomerantz EM. The development of competence-related and motivational beliefs: an investigation of similarity and influence among friends. J Educ Psychol. 2003;95(1):111–23. https://doi.org/10.1037/0022-0663.95.1.111.
50. Fujiyama H, Kamo Y, Schafer M. Peer effects of friend and extracurricular activity networks on students' academic performance. Soc Sci Res. 2021;97:102560. https://doi.org/10.1016/j.ssresearch.2021.102560.
51. Kingery J, Erdley C, Marshall K. Peer acceptance and friendship as predictors of early adolescents' adjustment across the middle school transition. Merrill Palmer Q. 2011;57(3):215–43. https://doi.org/10.1353/mpq.2011.0012.

52. World Medical Association. Declaration of Helsinki: medical research involving human subjects. JAMA. 2013;310(20):2191–4. https://doi.org/10.1001/jama.2013.281053.

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Family aspects, physical fitness, and physical activity associated with mental-health indicators in adolescents

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Abstract

Background: The objective of the study was to analyze the associations of family aspects, physical fitness, and physical activity with mental-health indicators in a sample of adolescents from Colombia.

Methods: A cross-sectional study carried out in a sample of 988 adolescents (11-17 years-old) from public schools in Montería. Mental-health indicators were evaluated: Stress, depression, anxiety, happiness, health-related quality of life (HRQL), and subjective wellness. Family aspects included family affluence, functionality, and structure. These variables, along with physical activity and screen time, were measured with questionnaires. A fitness score was established by assessing the components of fitness: Flexibility, cardiorespiratory fitness, grip strength, and lower-limb strength. Associations were analyzed by multivariate linear regression models.

Results: Nuclear family structure was associated with lower stress level (— 1.08, CI: — 1.98 - -0.18), and family functionality was associated with all the studied mental-health indicators (Stress: -0.11, CI: — 0.17 - -0.06; depression: -0.20, CI: — 0.25 - -0.16; trait anxiety: -0.13, CI: — 0.18 - -0.09; state anxiety: -0.12, CI: — 0.17 - -0.08; happiness: 0.09, CI: 0.07 - 0.1; HRQL: 1.13, CI: 0.99 - 1.27; subjective wellness: 1.67, CI: 1.39 - 1.95). Physical activity was associated (β, 95% Confidence Interval (CI)) with depression (— 0.27, — 0.57 - -0.02), trait anxiety (— 0.39, CI: — 0.65 - -0.13), state anxiety (— 0.30, CI: — 0.53 - -0.07), happiness (0.14, CI: 0.06 - 0.22), HRQL (3.63, CI: 2.86 – 4.43), and subjective wellness (5.29, CI: 3.75 – 6.83). Physical fitness was associated with stress (— 0.80, CI: — 1.17 - -0.43), state anxiety (— 0.45, CI: — 0.73 - -0.17), and HRQL (1.75, CI: 0.82 - 2.69); screen time was only associated with stress (0.06, CI: 0.02 - 0.11).

Conclusions: Family aspects were associated with mental health indicators, especially family functionality which was associated all mental-health indicators. Similarly, fitness, physical activity, and screen time were associated with the studied indicators of mental health. Particularly, physical activity was associated with all the mental-health indicators, except stress, which was only associated with screen time. Physical fitness was associated with stress, anxiety, and HRQL. Future studies could explore the causal relationships of fitness, physical activity and screen time with mental health in adolescents.

Keywords: Anxiety, Health-related quality of life, Mental health, Physical activity, Physical fitness, Sedentary behavior, Stress

Background

Mental health is an invaluable resource for personal development and adequate levels of social functioning. Currently, mental-health problems represent a

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prominent field for public health. This is mainly due to its high prevalence globally and to its adverse effects on the burden of global morbidity [1] and mortality [2]. It has been estimated that one in three adults has experienced alterations in their mental health in the course of their life [3]. The study of mental health in the school-age population is relevant due to its role in the development, in all its aspects – physical, social, intellectual and emotional; also, half of these alterations begin during adolescence [4]. Unfortunately, mental well-being is an elusive condition for much of the adolescent population. For example, it has been estimated that between 10 and 20% of adolescents on the planet have poor mental health [5]. In the case of Colombia, this estimate is considerably higher, reaching 33% [4].

Historically, the study of mental health has centered its interest on psychopathological symptoms and negative mental health conditions such as depression, anxiety, stress among others. More recently, positive psychology has emerged and incorporated positive domains and components to mental health. Here, the constructs of well-being, subjective wellness, life satisfaction, happiness and the like, are the focus of attention [6]. These constructs may be understood as cognitive and affective processes around life satisfaction and positive emotional experiences [7]. These positive mental processes may protect against the onset of mental health disorders [8].

Mental health is a complex concept; therefore, its determinants and associated factors are multiple, among which stand out personal aspects (state of health, previous experiences, habits related to health), family (quality of the family environment, economic conditions), and social (quality of social relationships with peers and friends), the built environment, among others [9]. In particular, previous studies have documented that high levels of physical activity, low levels of screen time, and sufficient sleep time are behaviors associated with higher levels of mental health [10, 11]. Furthermore, similar associations of physical activity with depression [12] and happiness [13], and physical fitness with mental health [14] have been reported. In addition, randomized controlled trials have documented the positive effects of physical activity on depression [15] and self-esteem [16]. Regarding the family, it has been pointed out that the nuclear family structure generates a protective environment for mental health in young people [17] and that family environment with economic deprivation can negatively affect adolescent mental health [18].

These antecedents reflect an advance in the understanding of factors associated with mental health in adolescents. However, more research attention is needed in low- and middle-income countries. Consequently, the objective of this study was to explore the associations of family aspects, physical fitness, and physical activity with mental-health indicators in a sample of adolescents in Colombia. In this study, mental-health indicators are explored, including negative entities such as stress, depression and anxiety, and positive entities such as happiness, health-related quality of life (HRQL), and subjective well-being. Identifying these factors associated with mental-health indicators could inform early interventions aimed at strengthening adolescents' mental health.

Methods

In this study, information was used from the project "Determinants of academic achievement, health, and wellness in school-age children" (De-Redes, 2018), and conducted in the city of Montería, Colombia. It is an observational study with a cross-association design carried out in adolescents from public schools, between 11 and 17 years old. The city has 63 public schools, of which eight urban and two rural were randomly selected. In each school, a course per grade, between grades 7 and 10, was randomly selected. In each course, all students of that course were invited to participate. The sample consisted of 988 students who voluntarily participated in the study; they signed the informed assent and their parents authorized their participation by signing the informed consent. The study was conducted following the guidelines of Declaration of Helsinki and its protocol was approved by the Research Ethics Committee of the University of Antioquia's University Institute of Physical Education.

Measurements

Mental-health indicators Seven mental-health indicators were measured, taken as outcome variables: the level of stress was measured with the Spanish version of the Children's Daily Stress Inventory (CDSI), consisting of 25 items (score total between 0 and 25) [19]. To estimate the level of depression, the abbreviated version of the inventory of depression in children (Children's Depression Inventory, CDI:S) was used, made up of ten items (total score between 0 and 20) [20]. Anxiety was measured with the State-Trait Anxiety Inventory for Children (STAIC), consisting of six items for each type of anxiety (total score between 5 and 24) [21]. Happiness was evaluated with the Subjective Happiness Scale, composed of four items (total score between 4 and 28, which was then averaged) [22]. HRQL was measured with the KidScreen-27 instrument, made up of 27 items (total score between 27 and 100) [23];]; and subjective well-being was estimated with the Spanish adaptation of the Personal Well-being Index-School Children (PWI-SC) [24], and applied to the Latin American context [25], composed of 12 items (total score

between 0 and 120). All these instruments had acceptable levels of internal consistency ($\alpha_{stress} = .70$, $\alpha_{depression} = .77$, $\alpha_{trait\ anxiety} = .72$, $\alpha_{state\ anxiety} = .70$, $\alpha_{happiness} = .60$, $\alpha_{HRQOL} = .91$, and $\alpha_{subjective\ wellness} = .92$).

Family aspects Three aspects of the family were analyzed: As a proxy for socioeconomic position, the Family Affluence Scale (FAS) was used; it inquiries about four elements that reflect the material conditions of the family: one's own room, Internet access at home, number of computers and cars [26]. The responses were added and gave a score between 0 and 8, to which tertiles were computed, indicating a better economic position as the tertile increases. The family structure was investigated to identify three types of structure: nuclear, single parent, and other. Family functionality was explored using the Family Apgar instrument [27], which contains five items exploring how satisfied the adolescent is with their family functions. Each item can be scored between zero and five, resulting in a score ranging from zero to 25.

Physical fitness Physical fitness was evaluated in different capacities. Flexibility was evaluated with the sit-and-reach test, which measures the flexibility of the lower back region and the hamstring muscles, and its values were recorded in centimeters [28]. The evaluation of the explosive strength of the lower limbs was carried out with the long-jump test, performing a forward jump with the greater impulse of the lower limbs, and the distance reached in centimeters was recorded [29]. Cardiorespiratory fitness was measured with the 20-m shuttle-run test, designed to evaluate the ability of the cardiorespiratory system to transport and use oxygen [30]; it consists of going and coming back in a space of 20 m, at an initial speed of 8.5 · km h-1, with increments of 0.5 km h-1 every minute until reaching maximum performance, recording the number of laps completed. With this information, the equation was applied to calculate the maximum oxygen consumption [31]. The grip strength was evaluated with the Jamar Handgrip Dynamometer (Sammons Preston, Bolingbrook, Illinois, USA.). The participant executed the test in each hand; the average was recorded, and the values were normalized by body weight. Each of the four physical-fitness variables was standardized for sex and age, by calculating z-scores, which were averaged to obtain a fitness z-score.

Physical activity and screen time Physical activity was measured with the Spanish version of the Physical Activity Questionnaire for Adolescent (PAQ-A) [32], of which acceptable correlation values have been reported with accelerometry [32]. In the questionnaire, a score between 1 and 5 was obtained; the higher the values, the higher the physical activity level. For screen time, the Sedentary Behavior Questionnaire (SBQ) [33], in which different domains of sedentary behavior were explored, including screen time made up of the use of television, computer, and video -games. The responses in these domains were added to obtain the number of hours of screen time per day. The instrument is valid for the classification of sedentary behavior [34].

Sociodemographic variables The body weight and height of the participants were measured to obtain the Body Mass Index (BMI); a Health or Meter scale with a precision of 200 g was used for body weight, and a Seca-brand height rod was used for height, measured in millimeters. Classification of BMI was based on z-scores from World Health Organization reference measurements [35]. The participants reported their age and sex, and the urban or rural location of the schools was recorded. Urban and rural areas are defined by the government based on political-administrative categories of the degree of urbanization. Urban areas are characterized by having a high degree of urbanization and high residential density. While rural areas are defined as the residual of the urban, that is, areas with scattered residences and low residential density [36].

Analysis

Descriptive statistics, proportions, and mean ± standard deviation were calculated after verifying the normal distribution in the variables considering the values of asymmetry and kurtosis (values between −2 and +2). Mean differences of mental health scores according to categorical variables were tested with independent samples T-Tests and one-way ANOVA and post hoc Tukey tests. For the analysis of the association between the variables analyzed and the mental-health indicators, the bivariate associations (raw) were initially explored, and then the multivariate linear regression models (adjusted) were constructed. Bivariate and multivariate associations were performed separately for each mental-health indicator. This is, binary associations between each one of the independent variables (sociodemographic variables, family aspects, physical fitness, physical activity, and screen time) and the seven mental health indicators were analyzed. Then, for the multivariate models and following the Homer-Lemeshow criterion [37], variables with *p*-values < .25 in the bivariate association were selected and included in the models. For the variable of family structure, which have three categories, dummy variables were created to fit the linear models. In total, seven separate models were analyzed, one for each mental health indicator. Interaction term between sex and age were explored

and its associations with all of the analyzed mental health indicators (a three-way interaction) were not significant. The 95% confidence intervals were obtained, and the significance level was established at p-value <.05. The analyzes were carried out with the SPSS Statistical Program for Windows v.24 (IBM Corp., Armonk, N.Y., USA).

Results

The descriptive characteristics are shown in Table 1. In total, 988 adolescents with an average age of 14.9 ± 1.5 years participated; girls made up 53.1% of the sample (n = 525), and about four out of every five adolescents were students from schools located in the urban zone. The FAS tertiles with the highest proportion of adolescents were – in their order – the second (41.6%), the third (31.6%) and the first (26.8%). One in three adolescents reported belonging to a nuclear family, and 26.1% (n = 258) reported belonging to a single-parent family, and the rest (7.5%) (n = 74) to another type of family structure. A prevalence of overweight of 16.3% (n = 161) was found. Table 1 also shows the results of the scores obtained in the measurement scales of the mental-health indicators, physical fitness, and physical activity level, as well as the average number of hours per day of screen time (7.2 ± 4.3).

Mean differences of mental-health indicators according to categories of independent variables are shown in Table 2. Compared to boys, girls reported higher levels

Table 1 Sample characteristics

Variables	*n*		%	
Sex				
Boys	463		46.9	
Girls	525		53.1	
Location				
Rural	169		17.1	
Urban	819		82.9	
Family Affluence Scale (tertiles)				
First	265		26.8	
Second	411		41.6	
Third	312		31.6	
Family structure				
Other	74		7.5	
Single parent	258		26.1	
Nuclear	656		66.4	
Overweight				
No	827		83.7	
Yes	161		16.3	
	Mean (SD)	*Min. - max.*	*Asymmetry (SE = .08)*	*Kurtosis (SE = .16)*
Age	14.9 (1.5)	11 - 17	.18	−.46
Apgar score	13.9 (4.2)	0 - 25	−.58	−.12
Stress score	8.4 (3.9)	0 - 22	.38	.01
Depression score	3.2 (3.2)	0 - 20	1.27	1.96
Trait-anxiety score	11.2 (3.2)	6 - 24	.51	.12
State-anxiety score	13.0 (2.9)	6 - 23	.08	−.10
Happiness score	4.8 (1.1)	1 - 7	−.29	.11
HRQL score	74.0 (11.8)	35.3 - 100	−.41	−.10
Subjective-wellness score	94.2 (20.7)	0 - 120	−1.1	1.40
Physical Fitness (z-score)	0.0 (0.6)	−2.0 - 2.8	−.04	.18
Physical-activity score	2.5 (0.8)	1.0 - 5.0	.10	−.25
Screen time (hours per day)	7.2 (4.3)	0 - 17	.23	−1.00

HRQL: Health-related quality of life

SD: Standard deviation

SE: Standard error

Table 2 Mean differences of mental-health indicators according to categories of independent variables

Variables	Stress Mean (SD)	Depression Mean (SD)	Trait anxiety Mean (SD)	State anxiety Mean (SD)	Happiness Mean (SD)	HRQL Mean (SD)	Subjective wellness Mean (SD)
Sex							
Boys	7.8 (3.8)*[a]	2.6 (2.8)*[a]	10.7 (3.0)*[a]	12.2 (2.7)*[a]	4.8 (1.0)	77.4 (10.9)*[a]	97.0 (17.8)*[a]
Girls	8.9 (3.9)	3.8 (3.3)	11.6 (3.3)	13.7 (2.9)	4.7 (1.2)	71.0 (11.7)	92.0 (22.8)
Location							
Rural	7.2 (3.7)*[a]	2.1 (2.5)*[a]	11.1 (2.9)	12.8 (2.6)	4.8 (1.0)	75.3 (11.9)	98.0 (21.6)*[a]
Urban	8.7 (3.9)	3.4 (3.2)	11.2 (3.3)	13.0 (3.0)	4.8 (1.1)	73.7 (11.7)	93.5 (20.5)
Family Affluence Scale (tertiles)							
First	8.5 (3.9)	3.0 (3.1)	11.1 (2.9)	13.1 (2.9)	4.8 (1.1)	73.2 (12.0)	94.4 (20.1)
Second	8.5 (4.0)	3.2 (3.1)	11.1 (3.2)	13.0 (2.9)	4.8 (1.1)	73.6 (11.5)	93.2 (21.96)
Third	8.2 (3.7)	3.4 (3.3)	11.3 (3.5)	12.9 (3.0)	4.7 (1.1)	75.2 (11.9)	95.4 (19.0)
Family structure							
Other	9.7 (3.6)*[b]	3.8 (3.4)	11.7 (4.0)	13.5 (2.8)	4.6 (1.1)	71.4 (12.8)*[b]	94.0 (25.5)
Single parent	8.8 (4.0)	3.0 (3.0)	11.3 (3.3)	13.0 (3.0)	4.8 (1.1)	73.3 (11.7)	93.0 (21.2)
Nuclear	8.1 (3.8)	3.2 (3.2)	11.1 (3.1)	13.0 (2.9)	4.8 (1.1)	74.6 (11.6)	94.7 (20.0)
Overweight							
No	8.4 (3.9)	3.2 (3.2)	11.2 (3.2)	12.9 (2.9)	4.8 (1.1)	74.1 (11.7)	94.8 (20.1)
Yes	8.7 (3.8)	3.4 (3.2)	11.2 (3.4)	13.4 (3.1)	4.8 (1.2)	73.5 (12.3)	91.3 (23.4)

HRQL: Health-related quality of life. * Differences statistically significant

[a] Mean differences tested with independent samples T-Tests. [b] Mean differences tested with one-way ANOVA

of stress, depression, trait anxiety, and state anxiety. Boys had higher scores of HRQL and subjective wellness. Students from urban schools reported higher scores of stress and depression, and lower subjective wellness score than students from rural schools. Compared to adolescents from nuclear families, adolescents with a family structure categorized as other, reported higher levels of stress (pairwise comparisons). There were differences in levels of HRQL across categories of family structure, but pairwise comparisons were not statistically significant.

The results of the bivariate (crude) linear associations between the variables studied and the mental-health indicators are shown in Table 2. The coefficients indicate that as age was positively associated with stress, trait and state anxiety, and negatively associated with HRQL and subjective well-being. Similarly, being a girl was significantly associated with higher stress levels, depression, trait and state anxiety, and lower levels of HRQL and subjective well-being. Belonging to urban schools was significantly associated with higher levels of stress and depression and lower levels of subjective well-being. The occurrence of overweight was significantly associated with lower subjective well-being values.

Regarding family aspects, shown in Table 3, it was found that FAS tertiles were positively associated with HRQL. Belonging to a single parent family was negatively associated with depression, and being member of a nuclear family was negatively associated with stress and positively associated with HRQL. Family's functionality score was negatively associated with stress, depression, trait and state anxiety, and positively associated with happiness, HRQL, and subjective well-being. Physical fitness was negatively associated with stress and state anxiety and positively associated with HRQL. Regarding physical activity, it was found that this behavior was negatively associated with stress, depression, trait and state anxiety and positively associated with happiness, HRQL, and subjective well-being. Finally, screen time was positively associated with stress and anxiety.

The results of the analysis of the multivariate linear associations (adjusted) between the variables studied and the mental-health indicators are shown in Table 4. The regression models included adjustment variables that had p-values $<.25$ in the bivariate association. After including the adjustment variables, it was found that age and screen time were positively associated with stress, and family's functionality score, physical fitness, and physical activity were negatively associated with stress. Being a girl and belonging to urban schools were associated with higher stress score, and being a member of a nuclear family was negatively associated with lower stress score. The linear model for depression, shows that being a girl and belonging to an urban school were associated with higher depression level.

Table 3 Bivariate linear associations between studied variables and mental-health indicators

	Stress	Depression	Trait anxiety	State anxiety	Happiness	HRQL	Subjective wellness
Variables	**β (95% CI)**	**β (95% CI)**	**β (95% CI)**	**β (95% CI)**	**β (95% CI)**	**β (95% CI)**	**β (95% CI)**
Age	0.46 (0.3; 0.6)**	0.08 (−0.1; 0.2)	0.26 (0.1; 0.4)**	0.14 (0.01; 0.26)*	−0.03 (−0.1; 0.0)	−1.41 (−2.0; −0.9)**	−1.80 (−2.7; −0.9)**
Sex (Ref. Boys)	1.14 (0.7; 1.6)**	1.24 (0.8; 1.6)**	0.82 (0.4; 1.2)**	1.47 (1.11; 1.82)**	−0.06 (−0.2; 0.1)	−6.44 (−7.8; −5.0)**	−5.24 (−7.8; −2.7)**
Location (Ref. Rural)	1.48 (0.8; 2.1)**	1.37 (0.8; 1.9)**	0.07 (−0.5; 0.6)	0.27 (−0.22; 0.75)	−0.05 (−0.2; 0.1)	−1.61 (−3.6; 0.3)	−4.41 (−7.8; −1.0)*
Overweight (Ref. Normal)	0.30 (−0.4; 1.0)	0.24 (−0.3; 0.8)	0.05 (−0.5; 0.6)	0.48 (−0.01; 0.98)	0.07 (−0.1; 0.2)	−0.53 (−2.5; 1.5)	−3.51 (−7.0; −0.0)*
Family Affluence Scale (tertiles)	−0.12 (−0.4; 0.2)	0.22 (−0.0; 0.5)	0.08 (−0.2; 0.3)	−0.10 (−0.34; 0.13)	−0.03 (−0.1; 0.1)	0.99 (0.0; 1.9)*	0.57 (−1.1; 2.3)
Family structure (Ref. Other)							
Single parent	−0.98 (−2.0; 0.0)	−0.83 (−1.6; −0.0)*	−0.35 (−1.2; 0.5)	−0.57 (−1.3; 0.2)	0.21 (−0.7; 0.5)	1.95 (−1.1; 5.0)	−1.02 (−6.4; 4.3)
Nuclear	−1.61 (−2.5; −0.7)**	−0.57 (−1.3; 0.2)	−0.58 (−1.4; 0.2)	−0.57 (−1.3; 0.1)	0.11 (−0.1; 0.4)	3.20 (0.4; 6.0)*	0.66 (−4.3; 5.6)
Family Apgar score	−0.13 (−0.2; −0.1)**	−0.22 (−0.3; −0.2)**	−0.15 (−0.2; −0.1)**	−0.14 (−0.2; −0.1)**	0.09 (0.1; 0.1)*	1.26 (1.1; 1.4)**	1.83 (1.5; 2.1)**
Physical Fitness (z-score)	−0.74 (−1.1; −0.4)**	−0.25 (−0.6; 0.1)	−0.11 (−0.4; 0.2)	−0.48 (−0.8; −0.2)**	0.06 (−0.0; 0.2)	1.94 (0.8; 3.1)**	1.41 (−0.6; 3.4)
Physical activity score	−0.43 (−0.7; −0.1)**	−0.61 (−0.9; −0.4)**	−0.63 (−0.9; −0.4)**	−0.70 (−0.9; −0.5)**	0.20 (0.11; 0.3)**	5.56 (4.7; 6.4)**	7.11 (5.6; 8.6)**
Screen time (hours per day)	0.09 (0.0; 0.1)**	0.06 (0.0; 0.1)**	−0.02 (−0.1; 0.0)	0.03 (−0.0; 0.1)	0.00 (−0.0; 0.0)	−0.05 (−0.2; 0.1)	−0.09 (−0.4; 0.2)

* Association statistically significant at $p < 0.05$

** Association statistically significant at $p < 0.01$

Family's functionality and physical activity scores were negatively associated with depression. The linear models for trait and state anxiety showed similar results. Both anxiety dimensions were positively associated with age, and negatively associated with family's functionality and physical activity scores. Being a girl was associated with higher trait and state anxiety level. In addition, physical fitness was negatively associated with state anxiety score.

Regarding positive components of mental health, linear regression models showed that family's functionality and physical activity scores were positively associated with happiness. Age was negatively associated with HRQL, and being a girl and belonging to urban schools were associated with lower HRQL score. Family's functionality score, physical fitness, and physical activity were positively associated with HRQL. Finally, age was negatively associated with subjective wellness. Being a girl and belonging to urban schools were associated with lower subjective wellness score. Family's functionality score and physical activity were positively associated with subjective wellness. BMI was not associated with any of the mental-health indicators analyzed.

Discussion

The study's objective was to analyze the associations of family aspects, physical fitness, and physical activity with mental-health indicators in a sample of adolescents from Colombia. These results indicated that adolescents' mental health is strongly related with the characteristics of the family, with the levels of physical fitness, and with physical activity and sedentary behavior, aspects that will be discussed separately.

Demographic factors, family factors, and mental-health indicators

The findings reveal that female sex was associated with higher stress, depression, trait and state anxiety scores, and with lower HRQL score. Similar results were reported in a systematic review indicating that girls presented more mental health problems than boys [38]. In addition, results showed that family affluence was associated with HRQL, that family structure was associated with stress, and that family functionality was associated with the seven mental-health indicators analyzed. These findings are consistent with previous studies. For

Table 4 Multivariate linear associations between studied variables and mental-health indicators

	Stress	Depression	Trait anxiety	State anxiety	Happiness	HRQL	Subjective wellness
Variables	**β (95% CI)**	**β (95% CI)**	**β (95% CI)**	**β (95% CI)**	**β (95% CI)**	**β (95% CI)**	**β (95% CI)**
Age	0.50 (0.3; 0.7)**	Not included	0.23 (0.1; 0.4)**	0.14 (0.0; 0.3)*	Not included	−1.2 (− 1.6; − 0.8)**	−1.56 (− 2.4; − 0.7)**
Sex (Ref. Boys)	1.09 (0.6; 1.6)**	0.95 (0.6; 1.3)**	0.58 (0.2; 1.0)**	1.23 (0.9; 1.6)**	Not included	−4.01 (−5.2; −2.8)**	−1.60 (− 4.04; 0.8)
Location (Ref. Rural)	1.41 (0.8; 2.0)**	1.18 (0.7; 1.7)**	Not included	Not included	Not included	−1.74 (− 3.4; − 0.1)*	− 3.98 (−7.1; − 0.9)*
Overweight (Ref. Normal)	Not included	Not included	Not included	0.22 (−0.3; 0.7)	Not included	Not included	−3.05 (−6.3; 0.2)
Family Affluence Scale (tertiles)	Not included	0.07 (−0.2; 0.3)	Not included	Not included	Not included	0.78 (−0.0; 1.6)	Not included
Family structure (Ref. Other)							
Single parent	−0.68 (−1.6; 0.3)	−0.34 (− 1.1; 0.4)	Not included	−0.25 (− 1.0; 0.5)	Not included	−0.39 (−2.8; 2.0)	Not included
Nuclear	−1.08 (−2.0; − 0.2)*	−0.1 (− 0.7; 0.7)	Not included	−0.22 (− 0.9; 0.4)	Not included	0.49 (− 1.8; 2.8)	Not included
Family Apgar score	−0.11 (− 0.2; − 0.1)**	−0.20 (− 0.2; − 0.2)**	−0.13 (− 0.2; − 0.1)**	−0.12 (− 0.2; − 0.1)**	0.09 (0.1; 0.1)**	1.13 (0.1; 1.3)**	1.67 (1.4; 1.9)**
Physical Fitness (z-score)	−0.80 (− 1.2; − 0.4)**	−0.27 (− 0.6; 0.0)	Not included	−0.45 (− 0.7; − 0.2)**	Not included	1.75 (0.8; 2.7)**	0.74 (− 1.1; 2.6)
Physical activity score	0.07 (− 0.2; 0.4)	−0.27 (− 0.5; − 0.0)*	−0.39 (− 0.6; − 0.1)**	−0.30 (− 0.5; − 0.1)*	0.14 (0.1; 0.2)**	3.65 (2.9; 4.4)**	5.29 (3.7; 6.8)**
Screen time (hours per day)	0.06 (0.0; 0.1)*	0.03 (−0.0; 0.1)	Not included	0.01 (−0.0; 0.0)	Not included	Not included	Not included

* Association statistically significant at $p < 0.05$

** Association statistically significant at $p < 0.01$

example, previous studies have documented that a family with appropriate functionality exerts a protective effect against depression in schoolchildren [39] and that adolescents from families with poor functionality are more likely to report depressive symptoms [40].

Among the mechanisms postulated to understand the relationship between family functioning and mental health, it has been pointed out that families with hostile and neglectful relationships trigger alterations in the nervous and hormonal systems of their children, causing emotions of detachment, rejection, and alienation in them, negatively affecting their mental health [41]. On the other hand, a positive, supportive and cohesive family environment promotes optimal levels of mental health in adolescents [42].

Fitness, physical activity, screen time, and mental-health indicators

In turn, physical fitness was associated with stress, state anxiety, and HRQL; physical activity was associated with all the mental-health indicators studied except stress, which was the only mental-health indicator found to be associated with screen time. The results of this study were consistent with previous reports regarding the association between physical fitness and mental health [14, 43]. Similar to the results of this study, associations have been indicated between physical activity with depression [12, 44], anxiety [44], happiness [13], with HRQL [45, 46], and with subjective well-being [47]. However, the absence of association of physical activity with anxiety and stress has been documented [12]. In addition, it has been reported that the association between physical activity and psychosocial problems are significantly stronger in boys than in girls [43]. In this regard, we found no evidence that the relationships between fitness, physical activity and mental health varied with sex. Associations of time spent watching television with depression [48, 49], anxiety [48], HRQL [50], and subjective well-being [51] have been documented in the literature, but these associations were not found in this study. Similar to that reported in the literature [12, 14], no associations were found between the BMI and mental-health indicators analyzed in this study.

As for the mechanisms that help explain the relationship between physical fitness and mental health, a biological mechanism has been suggested, indicating that aerobic exercise causes an antidepressant effect via the endocannabinoid system [52]. In turn, it has been

suggested that physical activity causes an increase in the brain-derived neurotrophic factor (BDNF), and this increase is associated with a reduction in levels of anxiety and depression [53]. Additionally, a psychosocial mechanism has been postulated, taking into account that participation in sports is popular during adolescence [54], and this may facilitate the development of socialization skills, considered a protective factor for mental health [55]. Although the explanatory mechanisms for the relationship between sedentary behavior and mental health are not well established, a psychosocial mechanism has been suggested by pointing out that excessive screen time can induce feelings of loneliness when performed in settings of social isolation, thus leading to poor mental health [56]. A behavioral mechanism is also proposed in the literature, indicating that – as more time is spent on the screen –physical activities [56] and adequate sleep [57] are reduced, negatively affecting adolescent mental health.

Implications of the findings

The findings reported in this study have implications on the intervention with physical activity and the mental health of adolescents in the family, school, and community contexts since – consistent with other studies – we have found an association between the level of physical fitness, physical activity, and mental health indicators, as well as the relationship between screen time and a relevant mental-health indicator for this population (i.e., stress). These associations may be further explored to evaluate the effects of interventions on mental health in adolescent population. In this sense, we propose that emphasis should be placed on strengthening, in quality and quantity, physical activity programs inside and outside of school, in order to promote physical activity habits, stimulate the development of health-related physical fitness and, as far as possible, reduce the time spent on the screen. At the same time, wellness programs in schools should consolidate, both individually and collectively, the integration of family aspects and the students' lifestyles as a human-development strategy. On the other hand, these results establish the need to look for a cause-effect relationship between physical activity/physical fitness and variables of mental-health outcomes. In this sense, trials that contemplate causal-mediation analysis [58, 59], aimed at exploring variables that have a mediating role on the effect of physical exercise on mental health in young people, may contribute to the construction of robust evidence for researchers and health and exercise professionals [60].

Limitations and strengths of the study

The results presented should be analyzed under the limitations of this study. In the first instance, it is highlighted that it is a cross-sectional study; therefore, any causal inference, for example, between physical fitness/physical activity with mental health, should be excluded. Second, health indicators, physical activity and screen time were evaluated through self-reporting questionnaires that, although validated, may present risks of information and classification bias. In the same way, it should be considered that this study does not record history or prevalence of any type of disease (physical or mental), economic situation, violence, or factors related to the family or community environment where the adolescent lives that, in a certain way, can have a confounding effect on the association presented here. Finally, school location (urban and rural) is a school-level variable that could be affecting mental health of students from the same school. With this, the assumption of independent observations may be compromised. The exploration of this aspect requires a multilevel analysis. However, this approach is beyond the scope of the article. On the other hand, this study presents methodological strengths, such as the size of the sample types implemented that allowed including adolescents from the urban and rural sectors, and that represents a predominantly low-income population, characteristic of a low-high-income country such as Colombia. In addition, various indicators of mental health were taken into account (i.e., level of stress, level of depression, anxiety, subjective happiness, HRQL, and subjective wellness), and simultaneously the level of physical activity, screen time (sedentary behavior), and health-related physical fitness were evaluated (i.e., grip strength and lower limbs, cardiorespiratory capacity, and flexibility), which allowed a more complete analysis to be presented.

Conclusion

This study shows that family affluence was associated with HRQL, that family structure was associated with stress, and that family functionality was associated with all mental-health indicators. The level of physical activity was associated with all indicators of mental health, except stress. On the other hand, physical fitness was related to stress, anxiety, and HRQL, while screen time was only associated with stress. In line with other research, the study findings have important practical implications that reveal the importance of promoting mental health in adolescents through school and community programs that promote the practice of physical activity, the development of health-related

physical fitness, and decreased screen time. On the other hand, more experimental evidence of the effect of physical exercise on mental-health indicators in adolescents is required, suggesting causal-mediation analysis to explain the relationship between physical activity and mental health, as well as the possible mechanisms involved.

Abbreviations

BMI: Body mass index; CDI:S: Children's Depression Inventory; CDSI: Children's Daily Stress Inventory; FAS: Family Affluence Scale; HRQL: Health-related quality of life; PAQ-A: Physical Activity Questionnaire for Adolescent; PA: Physical activity; PF: Physical fitness; PWI-SC: Personal Well-being Index- School Children; SBQ: Sedentary Behavior Questionnaire; STAIC: State-Trait Anxiety Inventory for Children.

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Authors' contributions

LL-G: Conceptualization, Methodology, Project administration, Investigation, Writing- Reviewing and Editing.
CA-P: Conceptualization, Methodology, Formal analysis, Writing- Original draft preparation.
CE-L: Conceptualization, Investigation, Writing- Reviewing and Editing.
JLP: Methodology, Investigation, Formal analysis, Writing- Original draft preparation.
JP-P: Investigation, Methodology, Writing- Reviewing and Editing.
ML-S: Conceptualization, Methodology, Investigation, Writing- Reviewing and Editing.
WW-F: Project administration, Investigation, Writing- Reviewing and Editing.
FP-V: Conceptualization, Investigation, Writing- Reviewing and Editing.
All authors read and approved the final manuscript.

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Availability of data and materials

All data is available from the corresponding author on reasonable request.

Declarations

Relevant guidelines

The study was conducted following the guidelines of Declaration of Helsinki.

Informed consent to participate

Participants were those who signed the informed assent and their parents authorized their participation by signing the informed consent.

Ethics approval

This study was approved by the Research Ethics Committee of the University of Antioquia's University Institute of Physical Education, in Medellín, Colombia (project number 2017-021, approval number 038, November 28-2017).

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interest.

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References

1. Alonso J, Chatterji S, He Y. The burdens of mental disorders: global perspectives from the WHO world mental health surveys. Cambridge, UK: Cambridge University Press; 2013.
2. World Health Organization. Meeting report on: Excess mortality in persons with severe mental disorders. https://www.who.int/mental_health/evidence/excess_mortality_meeting_report.pdf?ua=1.
3. Steel Z, Marnane C, Iranpour C, Chey T, Jackson JW, Patel V, et al. The global prevalence of common mental disorders: a systematic review and meta-analysis 1980-2013. Int J Epidemiol. 2014;43(2):476–93. https://doi.org/10.1093/ije/dyu038.
4. Kessler RC, Angermeyer M, Anthony JC, R DEG, Demyttenaere K, Gasquet I, et al. Lifetime prevalence and age-of-onset distributions of mental disorders in the World Health Organization's World Mental Health Survey initiative. World Psychiatry 2007;6(3):168-176,
5. Kieling C, Baker-Henningham H, Belfer M, Conti G, Ertem I, Omigbodun O, et al. Child and adolescent mental health worldwide: evidence for action. Lancet. 2011;378(9801):1515–25. https://doi.org/10.1016/S0140-6736(11)60827-1.
6. Pilgrim D, Rogers A, Pescosolido B. The SAGE handbook of mental health and illness: SAGE Publications; 2011.
7. Kashdan TB, Biswas-Diener R, King LA. Reconsidering happiness: the costs of distinguishing between hedonics and eudaimonia. J Posit Psychol. 2008;3(4):219–33. https://doi.org/10.1080/17439760802303044.
8. Keyes C. The mental health continuum: from languishing to flourishing in life. J Health Soc Behav. 2002:207–22. https://doi.org/10.2307/3090197.
9. Allen J, Balfour R, Bell R, Marmot M. Social determinants of mental health. Int Rev Psychiatry. 2014;26(4):392–407. https://doi.org/10.3109/09540261.2014.928270.
10. Sampasa-Kanyinga H, Colman I, Goldfield GS, Janssen I, Wang J, Podinic I, et al. Combinations of physical activity, sedentary time, and sleep duration and their associations with depressive symptoms and other mental health problems in children and adolescents: a systematic review. Int J Behav Nutr Phys Act. 2020;17(1):72. https://doi.org/10.1186/s12966-020-00976-x.
11. Oswald TK, Rumbold AR, Kedzior SGE, Moore VM. Psychological impacts of "screen time" and "green time" for children and adolescents: a systematic scoping review. PLoS One. 2020;15(9):e0237725. https://doi.org/10.1371/journal.pone.0237725.
12. Maenhout L, Peuters C, Cardon G, Compernolle S, Crombez G, DeSmet A. The association of healthy lifestyle behaviors with mental health indicators among adolescents of different family affluence in Belgium. BMC Public Health. 2020;20(1):958. https://doi.org/10.1186/s12889-020-09102-9.
13. van Woudenberg TJ, Bevelander KE, Burk WJ, Buijzen M. The reciprocal effects of physical activity and happiness in adolescents. Int J Behav Nutr Phys Act. 2020;17(1):147. https://doi.org/10.1186/s12966-020-01058-8.
14. Avitsland A, Leibinger E, Haugen T, Lerum O, Solberg RB, Kolle E, et al. The association between physical fitness and mental health in Norwegian adolescents. BMC Public Health. 2020;20(1):776. https://doi.org/10.1186/s12889-020-08936-7.
15. Bailey AP, Hetrick SE, Rosenbaum S, Purcell R, Parker AG. Treating depression with physical activity in adolescents and young adults: a systematic review and meta-analysis of randomised controlled trials. Psychol Med. 2018;48(7):1068–83. https://doi.org/10.1017/s0033291717002653.
16. Ekeland E, Heian F, Hagen KB. Can exercise improve self esteem in children and young people? A systematic review of randomised controlled trials. Br J Sports Med. 2005;39(11):792–8. https://doi.org/10.1136/bjsm.2004.017707.
17. Barrett AE, Turner RJ. Family structure and mental health: the mediating effects of socioeconomic status, family process, and social stress. J Health Soc Behav. 2005;46(2):156–69. https://doi.org/10.1177/002214650504600203.

18. Reiss F. Socioeconomic inequalities and mental health problems in children and adolescents: a systematic review. Soc Sci Med. 2013;90:24–31. https://doi.org/10.1016/j.socscimed.2013.04.026.
19. Trianes-Torres MV, Mena MJB, Fernández-Baena FJ, Escobar-Espejo M, Maldonado-Montero EF, Muñoz-Sánchez ÁM. Evaluación del estrés infantil: Inventario Infantil de Estresores Cotidianos (IIEC). Psicothema. 2009;21(4):598–603 http://www.redalyc.org/articulo.oa?id=72711895016.
20. Knight D, Hensley VR, Waters B. Validation of the Children's Depression Scale and the Children's Depression Inventory in a prepubertal sample. J Child Psychol Psychiatry. 1988;29(6):853–63. https://doi.org/10.1111/j.1469-7610.1988.tb00758.x.
21. Fioravanti-Bastos ACM, Cheniaux E, Landeira-Fernandez J. Development and validation of a short-form version of the Brazilian state-trait anxiety inventory. Psicol-Reflex Crit. 2011;24:485–94. https://doi.org/10.1590/S0102-79722011000300009.
22. Lyubomirsky S, Lepper HS. A measure of subjective happiness: preliminary reliability and construct validation. Soc Indic Res. 1999;46(2):137–55. https://doi.org/10.1023/a:1006824100041.
23. Vélez CM, Lugo LH, García HI. Validez y confiabilidad del 'Cuestionario de calidad de vida KIDSCREEN-27' versión padres, en Medellín. Colombia Rev Colomb Psiquiatr. 2012;41:588–605 http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0034-74502012000300010&nrm=iso.
24. Cummins RA, Lau A. Personal wellbeing index – (English) 3rd edition. Australia: Melbourne; 2005.
25. Oyanedel JC, Alfaro J, Mella C. Bienestar Subjetivo y Calidad de Vida en la Infancia en Chile. 2015;13(1).
26. Currie CE, Elton RA, Todd J, Platt S. Indicators of socioeconomic status for adolescents: the WHO health behaviour in school-aged children survey. Health Educ Res. 1997;12(3):385–97. https://doi.org/10.1093/her/12.3.385.
27. Forero L, Avendaño M, Duarte Z, Campo A. Consistencia interna y análisis de factores de la escala APGAR para evaluar el funcionamiento familiar en estudiantes de básica secundaria. Rev Colomb Psiquiatr. 2006;XXXV(1):23-29.
28. Wells K, Dillon E. The sit and reach—a test of back and leg flexibility. Res Q. 1952;23(1):115–8. https://doi.org/10.1080/10671188.1952.10761965.
29. Castro-Piñero J, Ortega FB, Artero EG, Girela-Rejón MJ, Mora J, Sjöström M, et al. Assessing muscular strength in youth: usefulness of standing long jump as a general index of muscular fitness. J Strength Cond Res. 2010;24(7):1810–7. https://doi.org/10.1519/JSC.0b013e3181ddb03d.
30. Leger L, Mercier D, Gadoury C, Lambert J. The multistage 20 metre shuttle run test for aerobic fitness. J Sports Sci. 1988;6(2):93–101. https://doi.org/10.1080/02640418808729800.
31. Mahar MT, Guerieri AM, Hanna MS, Kemble CD. Estimation of aerobic fitness from 20-m multistage shuttle run test performance. Am J Prev Med. 2011;41(4 Suppl 2):S117–23. https://doi.org/10.1016/j.amepre.2011.07.008.
32. Martinez-Gomez D, Martinez-de-Haro V, Pozo T, Welk GJ, Villagra A, Calle ME, et al. Reliability and validity of the PAQ-A questionnaire to assess physical activity in Spanish adolescents. Rev Esp Salud Publica. 2009;83(3):427–39. https://doi.org/10.1590/s1135-57272009000300008.
33. Rosenberg D, Norman GJ, Wagner N. Reliability and validity of the sedentary behavior questionnaire (SBQ) for adults. J Phys Act Health. 2010;7(6):697–705. https://doi.org/10.1123/jpah.7.6.697.
34. Rey-López JP, Ruiz JR, Ortega FB, Verloigne M, Vicente-Rodriguez G, Gracia-Marco L, et al. Reliability and validity of a screen time-based sedentary behaviour questionnaire for adolescents: the HELENA study. Eur J Pub Health. 2012;22(3):373–7. https://doi.org/10.1093/eurpub/ckr040.
35. de Onis M, Onyango AW, Borghi E, Siyam A, Nishida C, Siekmann J. Development of a WHO growth reference for school-aged children and adolescents. Bull World Health Organ. 2007;85(9):660–7. https://doi.org/10.2471/blt.07.043497.
36. Departamento Nacional de Estadística. Censa nacional de población y vivienda 2018. https://www.dane.gov.co/files/censo2018/informacion-tecnica/CNPV-2018-manual-conceptos.pdf.
37. Hosmer D, Lemeshow S. Applied logistic regression. New York: Wiley; 1989.
38. Bor W, Dean AJ, Najman J, Hayatbakhsh R. Are child and adolescent mental health problems increasing in the 21st century? A systematic review. Aust N Z J Psychiatry. 2014;48(7):606–16. https://doi.org/10.1177/0004867414533834.
39. Manalel JA, Antonucci TC. Beyond the nuclear family: Children's social networks and depressive symptomology. Child Dev. 2020;91(4):1302–16. https://doi.org/10.1111/cdev.13307.
40. Guerrero-Muñoz D, Salazar D, Constain V, Perez A, Pineda-Cañar CA, García-Perdomo HA. Association between family functionality and depression: a systematic review and meta-analysis. Korean J Fam Med. 2021;42(2):172–80. https://doi.org/10.4082/kjfm.19.0166.
41. Repetti RL, Taylor SE, Seeman TE. Risky families: family social environments and the mental and physical health of offspring. Psychol Bull. 2002;128(2):330–66. https://doi.org/10.1037//0033-2909.128.2.330.
42. Anthony EK, Stone SI. Individual and contextual correlates of adolescent health and well-being. Fam Soc. 2010;91(3):225–33. https://doi.org/10.1606/1044-3894.3999.
43. Wheatley C, Wassenaar T, Salvan P, Beale N, Nichols T, Dawes H, et al. Associations between fitness, physical activity and mental health in a community sample of young British adolescents: baseline data from the fit to study trial. BMJ Open Sport Exerc Med. 2020;6(1):e000819. https://doi.org/10.1136/bmjsem-2020-000819.
44. Zhu X, Haegele JA, Healy S. Movement and mental health: Behavioral correlates of anxiety and depression among children of 6–17 years old in the U.S. Ment Health Phys Act. 2019;16:60-65. https://doi.org/10.1016/j.mhpa.2019.04.002
45. Sampasa-Kanyinga H, Standage M, Tremblay MS, Katzmarzyk PT, Hu G, Kuriyan R, et al. Associations between meeting combinations of 24-h movement guidelines and health-related quality of life in children from 12 countries. Public Health. 2017;153:16–24. https://doi.org/10.1016/j.puhe.2017.07.010.
46. Dumuid D, Maher C, Lewis LK, Stanford TE, Martín Fernández JA, Ratcliffe J, et al. Human development index, children's health-related quality of life and movement behaviors: a compositional data analysis. Qual Life Res. 2018;27(6):1473–82. https://doi.org/10.1007/s11136-018-1791-x.
47. Garcia-Hermoso A, Hormazabal-Aguayo I, Fernandez-Vergara O, Olivares PR, Oriol-Granado X. Physical activity, screen time and subjective well-being among children. Int J Clin Health Psychol. 2020;20(2):126–34. https://doi.org/10.1016/j.ijchp.2020.03.001.
48. Maras D, Flament MF, Murray M, Buchholz A, Henderson KA, Obeid N, et al. Screen time is associated with depression and anxiety in Canadian youth. Prev Med. 2015;73:133–8. https://doi.org/10.1016/j.ypmed.2015.01.029.
49. Hoare E, Millar L, Fuller-Tyszkiewicz M, Skouteris H, Nichols M, Jacka F, et al. Associations between obesogenic risk and depressive symptomatology in Australian adolescents: a cross-sectional study. J Epidemiol Community Health. 2014;68(8):767–72. https://doi.org/10.1136/jech-2013-203562.
50. Arango CM, Páez DC, Lema L, Sarmiento O, Parra D. Television viewing and its association with health-related quality of life in school-age children from Montería, Colombia. J Exerc Sci Fit. 2014;12:68–72. https://doi.org/10.1016/j.jesf.2014.07.002.
51. Martínez-López EJ, Hita-Contreras F, Moral-García JE, Grao-Cruces A, Ruiz JR, Redecillas-Peiró MT, et al. Association of low weekly physical activity and sedentary lifestyle with self-perceived health, pain, and well-being in a Spanish teenage population. Sci Sport. 2015;30(6):342–51. https://doi.org/10.1016/j.scispo.2015.04.007.
52. Heyman E, Gamelin FX, Goekint M, Piscitelli F, Roelands B, Leclair E, et al. Intense exercise increases circulating endocannabinoid and BDNF levels in humans-possible implications for reward and depression. Psychoneuroendocrinology. 2012;37(6):844–51. https://doi.org/10.1016/j.psyneuen.2011.09.017.
53. Cotman CW, Berchtold NC, Christie LA. Exercise builds brain health: key roles of growth factor cascades and inflammation. Trends Neurosci. 2007;30(9):464–72. https://doi.org/10.1016/j.tins.2007.06.011.
54. Eime R, Payne W, Harvey J. Trends in organised sport membership: impact on sustainability. J Sci Med Sport. 2009;12(1):123–9. https://doi.org/10.1016/j.jsams.2007.09.001.
55. Eime RM, Young JA, Harvey JT, Charity MJ, Payne WR. A systematic review of the psychological and social benefits of participation in sport for children and adolescents: informing development of a conceptual model of health through sport. Int J Behav Nutr Phys Act. 2013;10:98. https://doi.org/10.1186/1479-5868-10-98.

56. Ohannessian CM. Media use and adolescent psychological adjustment: an examination of gender differences. J Child Fam Stud. 2009;18(5):582–93. https://doi.org/10.1007/s10826-009-9261-2.
57. Primack BA, Swanier B, Georgiopoulos AM, Land SR, Fine MJ. Association between media use in adolescence and depression in young adulthood: a longitudinal study. Arch Gen Psychiatry. 2009;66(2):181–8. https://doi.org/10.1001/archgenpsychiatry.2008.532.
58. Daniel RM, De Stavola BL, Cousens SN, Vansteelandt S. Causal mediation analysis with multiple mediators. Biometrics. 2015;71(1):1–14. https://doi.org/10.1111/biom.12248.
59. Hicks R, Tingley D. Causal mediation analysis. Stata J. 2011;11(4):605–19. https://doi.org/10.1177/1536867X1201100407.
60. Lynch BM, Dixon-Suen SC, Ramirez Varela A, Yang Y, English DR, Ding D, et al. Approaches to improve causal inference in physical activity epidemiology. J Phys Act Health. 2020;17(1):80–4. https://doi.org/10.1123/jpah.2019-0515.

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Diciembre de 2004

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EL CONSEJO DE FACULTAD DE EDUCACIÓN, EN USO DE SUS FACULTADES LEGALES Y

CONSIDERANDO:

Que el estudiante **FABIO ANDRÉS PEREA VELÁSQUEZ**, de la Licenciatura en Cultura Física, Recreación y Deportes, presentó y sustentó ante el jurado evaluador su Trabajo de Grado titulado " EL EJERCICIO FÍSICO COMO ESTRATEGIA PARA EL CONTROL DEL ÍNDICE DE MASA CORPORAL-INDICE DE CINTURA CADERA EN LOS PACIENTES ADSCRITOS AL PROGRAMA REHABILITACIÓN CARDÍACA EN LA CLÍNICA CARDIÓVASCULAR – MONTERÍA AÑO 2004", en la línea de investigación Actividad Física y Salud, obteniendo una calificación **MERITORIA.**

Que este trabajo ha sido un logro de carácter investigativo, resaltando recursividad y compromiso social alcanzado ante la Comunidad Científica y Educativa en esta área de conocimiento a nivel local y Nacional, como también para la Facultad de Educación y Ciencias Humanas de la Universidad de Córdoba.

RESUELVE:

ARTICULO ÚNICO: Hágase un Reconocimiento a el joven **FABIO ANDRÉS PEREA VELÁSQUEZ,** por su destacado trabajo, por contribuir a nuevos alcances disciplinares e investigativos.

Dada en Montería, a los 16 días del mes de diciembre de 2004.

ROCIO BLANCO REZA
Decana

ZAYDA ISABEL LENGUA JULIO
Secretaria Académica

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UNIVERSIDAD DE CÓRDOBA
RECTORÍA
VICERRECTORÍA ACADÉMICA

MENCIÓN DE HONOR A:

Fabio Andrés Perea Velázquez

Por haber alcanzado el 1er. Puesto en Promedio en el Programa de Licenciatura en Cultura Física, durante el desarrollo del primer período académico de 2004.

Montería, 24 de noviembre de 2004.

CLAUDIO SÁNCHEZ PARRA
Rector

JAIRO DURANGO VERTEL
Vicerrector Académico

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UNIVERSIDAD DE CÓRDOBA
FACULTAD DE EDUCACIÓN Y CIENCIAS HUMANAS
DEPARTAMENTO DE CULTURA FÍSICA
COMITÉ DE PRÁCTICA PEDAGÓGICA

El Comité de Práctica Pedagógica en reconocimiento
al desempeño, responsabilidad y dedicación en su labor
concede Mención de Honor a:

FABIO ANDRÉS PEREA

Como mejor docente en formación en la Práctica
RECREACIÓN COMUNITARIA.
Dada en Montería el 11 de junio de 2004.

ROCIO BLANCO REZA
Decana

FELIX SANTANA LOBO
Jefe Departamento

MARTHA MOLINA GONZALEZ
Coordinadora

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INSTITUTO COLOMBIANO DEL DEPORTE
COLDEPORTES
Sistema Único de Acreditación y Certificación

El Director General del Instituto Colombiano del Deporte Coldeportes

CERTIFICA QUE:

FABIO PEREA VELASQUEZ

PARTICIPO

PROGRAMA DE CAPACITACION DEL SISTEMA UNICO DE ACREDITACION Y CERTIFICACION DEL SISTEMA NACIONAL DEL DEPORTE

Preparación para la certificación del desempeño laboral de los entrenadores deportivos al servicio del sistema nacional del deporte

Everth Bustamante García
Director General Coldeportes

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SERVISPORT M.C. LTDA.
INDEPORTES CÓRDOBA

CONCEDE EL PRESENTE DIPLOMA
A:

FABIO ANDRÉS PEREA
C.C. 15645389 DE CERETE - CÓRDOBA

Por haber desarrollado el Curso de Actualización en Ciencias del Ejercicio y Entrenamiento Deportivo aplicado a diferentes Especialidades Deportivas con una intensidad de horas de 48 horas

Dado en Montería- Córdoba, a los 24 días del mes de Abril del 2010

Dr. Juan Carlos Mazza
Ponente

Dr. Jorge Negrete López
Director Indeportes - Córdoba

Esp. Mariano Salleg Cabarcas
Coordinado General

comfacor

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SERVISPORT M.C. LTDA.
INDEPORTES CÓRDOBA

El Suscrito Coordinador General del Evento

HACE CONSTAR QUE:

FABIO ANDRÉS PEREA

Asistió y Participó en el **CURSO INTERNACIONAL EN CIENCIAS DEL EJERCICIO Y ENTRENAMIENTO DEPORTIVO APLICADO A DIFERENTES ESPECIALIDADES DEPORTIVAS**, realizado en la Ciudad de Montería - Córdoba, los días 22, 23 y 24 de Abril del año 2010, cursando los siguientes contenidos:

TEMATICA

- Aspectos Filosóficos y Políticos de un programa de entrenamiento deportivo a largo plazo.
- Fundamentos fisiológicos de los sistemas energéticos.
- Principios Fisiológicos y Metodológicos del Entrenamiento Deportivo.
- La producción de energía continua ("Continuum" Energético) en los esfuerzos deportivos.
- El "Continuum" Energético durante los esfuerzos en deportes acíclicos.
- El "Continuum" Energético durante los esfuerzos en deportes cíclicos.
- Acido Láctico, ejercicio y procesos de recuperación.
- Aspectos de los procesos de Evaluación Mèdico - Deportiva aplicables a diferentes deportes.
- Áreas funcionales aeróbicas en diferentes disciplinas cíclicas.
- Evaluación de lactato sanguíneo en deportistas de diferentes modalidades deportivas.
- Interpretación y transferencia de los resultados de lactometría aplicados al entrenamiento deportivo.
- Aspectos nutricionales aplicables a los programas de entrenamiento y competencia.
- Entrenamiento y competencia deportiva en ambientes o medios calurosos.

Para mayor constancia se firma en Montería a los 24 días del mes de Abril de 2010

Dr. Juan Carlos Mazza
Ponente

Esp. Mariano Salleg
Coordinador General

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Pronet

Profesionales en red

CERTIFICA QUE:

FABIO PEREA VELASQUEZ

C.C 15.645.398

Participó en el curso de:

CAPACITACIÓN EN SALVAMENTO ACUÁTICO BÁSICO Y USO DE EMBARCACIONES

Con una intensidad de 32 horas Teórico-Prácticas

Noviembre 02 - 05 de 2010

CARLOS ALBERTO GARCIA CONGOTE
INSTRUCTOR

EDUCACION CONTINUA

UNIVERSIDAD DE ANTIOQUIA

EDUCACIÓN CONTINUA

EL INSTITUTO UNIVERSITARIO DE EDUCACIÓN FÍSICA DE LA UNIVERSIDAD DE ANTIOQUIA

Hace constar que:

FABIO ANDRÉS PEREA VELÁSQUEZ

C.C. 15645398

Luego de cumplir con las actividades programadas con una intensidad de 24 horas y de reunir los demás requisitos que exigen las normas universitarias, le expide el presente certificado

SEMINARIO TALLER ENTRENAMIENTO FUNCIONAL

Medellín, Junio 22 de 2014

GLORIA MARIA CASTAÑEDA CLAVIJO
Directora Instituto Universitario de Educación Física

MARLON ANDRÉS AMAYA CADAVID
Coordinador del Centro de Extensión

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Libertad y orden
REPÚBLICA DE COLOMBIA

El Servicio Nacional de Aprendizaje SENA

En cumplimiento de la Ley 119 de 1994

Hace constar que

FABIO ANDRÉS PEREA VELÁSQUEZ

Con Cedula de Ciudadania No. 15.645.398

Cursó y aprobó la acción de Formación

NUTRICION Y ALIMENTACION EN EL DESARROLLO HUMANO

con una duración de 40 horas

En testimonio de lo anterior, se firma el presente en Ibagué, a los once (11) días del mes de octubre de dos mil dieciseis (2016)

Firmado Digitalmente por
ELSA AURORA BOHORQUEZ VARGAS
SERVICIO NACIONAL DE APRENDIZAJE - SENA
Autenticidad del Documento
Bogotá - Colombia

ELSA AURORA BOHORQUEZ VARGAS
Subdirectora
CENTRO DE INDUSTRIA Y CONSTRUCCION
REGIONAL TOLIMA

38420011 - 11/10/2016
FECHA REGISTRO

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"VIGILADA MINEDUCACIÓN"
Rumbo a la
ACREDITACIÓN
INSTITUCIONAL

UNIVERSIDAD DE CÓRDOBA

FACULTAD DE EDUCACIÓN Y CIENCIAS HUMANAS
DEPARTAMENTO DE CULTURA FÍSICA



CERTIFICAN QUE:

PEREA VELASQUEZ FABIO ANDR

Identificado con: 15645398

Codigo de verificacion: 907890e3927184f327573ad34f2f994a

ASISTIÓ AL I CONGRESO INTERNACIONAL DE EDUCACIÓN FÍSICA, RECREACIÓN, DEPORTE Y ACTIVIDAD FÍSICA: *Aportes para la Convivencia y la Paz*.

REALIZADO EN EL CENTRO DE CONVENCIONES DE CÓRDOBA, MONTERIA
EL 14 Y 15 DE SEPTIEMBRE DE 2017

GALO ALARCÓN CONTRERAS
DECANO FACULTAD DE EDUCACIÓN
Y CIENCIAS HUMANAS

OVER VANEGAS CARABALLO
JEFE DEL DEPARTAMENTO DE CULTURA FÍSICA

ALDO NEYL RODRÍGUEZ ARRIETA
COORDINADOR GENERAL DEL CONGRESO

PAZ CÓRDOBA
Construcción Social y Territorial de la PAZ

GICAFS

Área Chica

Casa del DEPORTE

INDEPORTES CÓRDOBA

Certificado GP 134-1

Certificado SC 5778-1

UNIVERSIDAD DE CÓRDOBA

DIVISIÓN DE BIBLIOTECAS Y RECURSOS EDUCATIVOS

"VIGILADA MINEDUCACIÓN"

En Atención a que:

PEREA VELASQUEZ FABIO ANDR

Identificado con: 15645398

Codigo de verificacion: 459286d5a5d308813fd764e9f23047af

Asistió el Curso:

HABILIDADES INFORMATIVAS EN INVESTIGACIÓN

Realizado en la Universidad de Córdoba, con una intensidad de 8 horas.
Montería, 7 de septiembre de 2018.

ACREDITACIÓN INSTITUCIONAL

LEONOR CRSITINA RESTREPO A.
Jefe División de Bibliotecas y
Recursos Educativos

Diseñado por: CINTIA | UNICORDOBA

Certificado GP 134-1 Certificado SC 5778-1

UNIVERSIDAD DE CÓRDOBA

VICERRECTORÍA ACADÉMICA
FACULTAD DE EDUCACIÓN Y CIENCIAS HUMANAS
DEPARTAMENTO DE INFORMÁTICA EDUCATIVA

"VIGILADA MINEDUCACIÓN"

Certifica que:

PEREA VELASQUEZ FABIO ANDR

Identificado con: 15645398

Codigo de verificacion: d83070f6218c83846cb168480c68890f

APROBÓ CON UN DESEMPEÑO SOBRESALIENTE EL "DIPLOMADO EN PLANEACIÓN DE CURSOS BASADOS EN RESULTADOS DE APRENDIZAJE PARA CONTEXTOS MEDIADOS CON TECNOLOGÍAS DE LA INFORMACIÓN Y LA COMUNICACIÓN" Realizado en el marco de la capacitación en TIC aplicadas a la formación universitaria para docentes de la Universidad de Córdoba. Desarrollado del 3 de agosto al 21 de noviembre de 2020 con una intensidad de 120 horas.

Dado en Montería a los 11 días del mes de Diciembre de 2020.

Manuel Cortina Nuñez
Decano Facultad de Educación y Ciencias Humanas

Isabel Muñoz Vargas
Jefe de Departamento de Informática Educativa

DISEÑADO POR: CINTIA | UNICORDOBA - JCAC

Certificado SC 5278-1

acreditada INSTITUCIONALMENTE

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Libertad y orden
REPÚBLICA DE COLOMBIA

El Servicio Nacional de Aprendizaje SENA

En cumplimiento de la Ley 119 de 1994

Hace constar que

FABIO ANDRES PEREA VELASQUEZ

Con Cedula de Ciudadania No. 15645398

Cursó y aprobó la acción de Formación

LIDERAZGO, MOTIVACIÓN Y TRABAJO EN EQUIPO

con una duración de 40 horas

En testimonio de lo anterior. se firma el presente en Soacha. a los veintiseis (26) dias del mes de abril de dos mil veintiuno (2021)

Firmado Digitalmente por

ROBERTO PRIETO LADINO
Subdirector
CENTRO INDUSTRIAL Y DE DESARROLLO EMPRESARIAL DE SOACHA
REGIONAL CUNDINAMARCA

73739614 - 26/04/2021
FECHA REGISTRO

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UNIVERSIDAD DE CÓRDOBA

OFICINA DE GESTIÓN DE TALENTO HUMANO
OFICINA DEL SISTEMA INTEGRADO DE GESTIÓN

"VIGILADA MINEDUCACIÓN"

Certifica que:

PEREA VELASQUEZ FABIO ANDR

Identificado con: 15645398

Codigo de verificacion: b5bf4bc81c6a6d8f12bf90b0410be5c5

APROBÓ EL CURSO:
GENERALIDADES DEL SISTEMA INTEGRAL DE GESTIÓN DE LA CALIDAD - SIGEC

Realizado en la Universidad de Córdoba, con una intensidad horaria de 20 horas
Montería, Córdoba, 11 de marzo de 2022

Elias Aruachan Torres
Jefe Oficina de Gestión de Talento Humano

Tatiana Martínez Simanca
Jefe Oficina del Sistema Integrado de gestión

acreditada INSTITUCIONALMENTE
Res. MEN 2956 de 22 de marzo de 2019, vigencia: 4 años

icontec ISO 9001
Certificado SC 5278-1

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UNIVERSIDAD DE CÓRDOBA

VICERRECTORÍA DE INVESTIGACIÓN Y EXTENSIÓN
FACULTAD DE EDUCACIÓN Y CIENCIAS HUMANAS
DEPARTAMENTO DE CULTURA FÍSICA

"VIGILADA MINEDUCACIÓN"

II CONGRESO INTERNACIONAL EN EDUCACIÓN FÍSICA, RECREACIÓN, DEPORTE Y ACTIVIDAD FÍSICA
"Innovación y tendencias"

Certifica que:

PEREA VELASQUEZ FABIO ANDR

Identificado con: 15645398

Codigo de verificacion: 3f2d2b5f66834b302e785d15b7740aad

Asistió al II Congreso Internacional en Educación Física, Recreación, Deporte y Actividad Física

"Innovación y tendencias"

Realizado en el Centro de Convenciones de Córdoba
Montería, los dias 2 y 3 de mayo de 2019.

GILMAR SANTAFÉ PATIÑO
Vicerrector de Investigación y Extensión

GALO ALARCÓN CONTRERAS
Decano

MARIANO SALLEG CABARCAS
Jefe Departamento

ALDO RODRIGUEZ ARRIETA
Coordinador

Diseñado por: CINTIA | UNICORDOBA

acreditada INSTITUCIONALMENTE
Res. MEN 2956 de 22 de marzo de 2019, vigencia: 4 años

GICAFS

UNIVERSIDAD DE CÓRDOBA

OFICINA DE GESTIÓN DE TALENTO HUMANO
OFICINA DE SISTEMA INTEGRADO DE GESTIÓN

"VIGILADA MINEDUCACIÓN"

SIGEC
Sistema Integrado de Gestión

UNICÓRDOBA un privilegio

Certifica que:

PEREA VELASQUEZ FABIO ANDR

Identificado con: 15645398

Codigo de verificacion: a21339725e9bd58d341bd262c65942ab

APROBÓ CADA UNO DE LOS MÓDULOS DEL CURSO:

MEJORAMIENTO CONTINUO DEL SIGEC: ESTRATEGIA Y MODERNIZACIÓN INSTITUCIONAL

Realizado en la Universidad de Córdoba, con una intensidad horaria de 40 horas
Montería, Córdoba 6 de Octubre de 2023.

Tibisay Cartagena Revuelta
Oficina de Gestión de Talento Humano

Tatiana Martínez Simanca
Jefe Oficina de Sisetma Integrado de Gestión

icontec ISO 9001 CO-SC5278-1

IQNET CERTIFIED MANAGEMENT SYSTEM

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UNIVERSIDAD DE CÓRDOBA

FACULTAD DE EDUCACIÓN Y CIENCIAS HUMANAS
DEPARTAMENTO DE CULTURA FÍSICA

"VIGILADA MINEDUCACIÓN"

acreditada INSTITUCIONALMENTE

Resolución de MinEducación N° 020020 del 11 de enero de 2023 por 6 años

CERTIFICAN QUE:

PEREA VELASQUEZ FABIO ANDR

Identificado con: 15645398

Codigo de verificacion: a44f189804489e09d76ff22b26416af7

Asistió al: "III CONGRESO INTERNACIONAL DE EDUCACIÓN FÍSICA, RECREACIÓN Y DEPORTE "EDURED 2023"

Realizado en Tacasuan, con una intensidad horaria de 20 horas
Montería, Córdoba. 2 y 3 de noviembre de 2023.

OVER VANEGAS CARABALLO
Jefe del Departamento de Cultura Física

IQNET CERTIFIED MANAGEMENT SYSTEM

icontec ISO 9001 CO-SC5278-1

CINTIA

UNIVERSIDAD DE CÓRDOBA

"VIGILADA MINEDUCACIÓN"

Oficina de Gestión del talento Humano
Oficina del Sistema Integrado de Gestión
Centro de Innovación en TIC para apoyo a la academia

Certifican que:

PEREA VELASQUEZ FABIO ANDR

Identificado con: 15645398

Codigo de verificacion: 586e87b5980a98291f26a059e6c53b30

Aprobó satisfactoriamente todos los módulos del curso:

Sistema Integrado de Gestión y Aseguramiento de la Calidad, Estrategia y Modernización Institucional

realizado en la Universidad de Córdoba, con una intensidad de 40 horas.

Se expide en Montería, Córdoba, a los 17 días del mes de diciembre de 2025.

Jorge Díaz Bernal
Jefe oficina de Gestión del Talento Humano

Juan Carlos Guzmán Castro
Jefe oficina de Sistema Integrado de Gestión

Mario Ramón Macea Anaya
Jefe oficina de Cintia

Para verificar la autenticidad de este certificado, ingrese el código de verificación en: http://campusvirtual.unicordoba.edu.co/inscripciones/certificados

SIGEC
Sistema Integrado de Gestión y Aseguramiento de la Calidad

creditada

ASDEPOR LTDA

NIT. 812.005.606-1

CERTIFICA

Que el Licenciado **FABIO ANDRES PEREA VELASQUEZ** identificado con numero de cedula 15.645.398 de Cerete trabajó en esta empresa en el periodo comprendido entre el 1 de Abril al 30 de Junio de 2006 en el cargo de Instructor de Fútbol de la Escuela de Formación Deportiva de la empresa Asdepor Ltda..

Esta constancia se hace por solicitud del interesado, el día 7 de Febrero de 2007.

Atentamente,

Juan Pablo Dechamps
C.C. 78.715.917 de Montería
Gerente

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comfacor

LA SUSCRITA SUBDIRECTORA ADMINISTRATIVA

CERTIFICA:

Que el Sr. **FABIO ANDRES PEREA VELASQUEZ**, identificado con la Cédula de Ciudadanía Nº 15.645.398 de Cerete (Córdoba), prestó sus servicios profesionales para el desarrollo de las distintas actividades deportivas de esta Corporación mediante Contratos de Prestación de Servicios; discriminados a continuación:

Nº CONTRATO	VIGENCIA	VALOR
0665-2006	27/07/2006-22/12/2006	$5.000.000.00
0238-2007	26/02/2007-26/12/2007	$12.075.000.00
01389-2008	10/03/2008-31/12/2008	$12.298.388.00
0037-2009	02/02/2009-31/12/2009	$13.566.267.00
0029-2010	01/02/2010-31/12/2010	$15.818.264.00
0021-2011	01/02/2011-31/12/2011	$16.292.804.00
0098-2012	12/03/2012-31/08/2012	$8.686.848.00

Esta constancia se expide en la ciudad de Montería a los veintidós (22) días del mes de Enero de 2013, a solicitud de la parte interesada.

MARIA ELENA BURGOS ARANGO

Proyecto: Daniela Polo

VIGILADO SUPERINTENDENCIA DEL SUBSIDIO FAMILIAR

Medellín, 28 de Febrero de 2022

A QUIEN PUEDA INTERESAR

La empresa **SPORTY CITY S.A.S**, identificada con **NIT. 900.777.063-3** certifica al señor **FABIO ANDRES PEREA VELASQUEZ** identificado con cédula de ciudadanía **No. 15.645.398**, laboró en esta empresa desde el **01 de Octubre de 2015,** hasta el **28 de Febrero de 2022,** desempeñándose como **Líder de Sede,** con contrato a término **Indefinido** y un salario mensual de **$3.245.603.**

Cordialmente,



_____ **YIMY JULIAN JIMENEZ OSPINA** GERENTE RECURSOS HUMANOS **SPORTY CITY S.A.S.**
NIT: 900777063-3

OGTH-UC – 1209

Montería, 28 de noviembre de 2025

EL JEFE (E) DE LA OFICINA DE GESTION DE TALENTO HUMANO

HACE CONSTAR:

Que el señor **FABIO ANDRÉS PEREA VELASQUEZ,** identificado con cédula de ciudadanía número 15.645.398 expedida en Cereté, laboró en esta Institución como Docente de Hora Catedra durante el tiempo comprendido de:

Marzo 20 de 2007 hasta el 13 de junio de 2007; Departamento de Cultura Física, con unaintensidad horaria de 8, 31 horas semanales.

Agosto 1 de 2007 hasta el 30 de noviembre de 2007; Departamento de Cultura Física, con unaintensidad horaria de 5 horas semanales.

Febrero 4 de 2008 hasta el 13 de junio de 2008; Departamento de Cultura Física, con unaintensidad horaria de 11 horas semanales.

Agosto 4 de 2008 hasta el 12 de diciembre de 2008; Departamento de Cultura Física, con unaintensidad horaria de 19 horas semanales.

Febrero 2 de 2009 hasta el 14 de junio de 2009; Departamento de Cultura Física, con unaintensidad horaria de 13 horas semanales.

Agosto 18 de 2009 hasta el 13 de diciembre de 2009; Departamento de Cultura Física, con unaintensidad horaria de 7 horas semanales.

Febrero 8 de 2010 hasta el 18 de junio de 2010; Departamento de Cultura Física, con unaintensidad horaria de 7 horas semanales.

Agosto 2 de 2010 hasta el 12 de diciembre de 2010; Departamento de Cultura Física, con unaintensidad horaria de 7 horas semanales.

Enero 24 de 2011 hasta el 5 de junio de 2011; Departamento de Cultura Física, con unaintensidad horaria de 19 horas semanales.

Agosto 1 de 2011 hasta el 3 de diciembre de 2011; Departamento de Cultura Física, con unaintensidad horaria de 15 horas semanales

Marzo 12 de 2012 hasta el 14 de julio de 2012; Departamento de Cultura Física, con unaintensidad horaria de 8 horas semanales.

Octubre 18 de 2012 hasta el 24 de diciembre de 2012; Departamento de Cultura Física, con unaintensidad horaria de 15 horas semanales.

Enero 14 de 2013 hasta el 23 de febrero de 2013; Departamento de Cultura Física, con unaintensidad horaria de 15 horas semanales.

Abril 1 de 2013 hasta el 27 de julio de 2013; Departamento de Cultura Física, con una intensidadhoraria de 9 horas semanales.

Febrero 3 de 2014 hasta el 14 de junio de 2014; Departamento de Cultura Física, con unaintensidad horaria de 324 horas durante el periodo.

Agosto 5 de 2014 hasta el 6 de diciembre de 2014; Departamento de Cultura Física, con unaintensidad horaria de 342 horas durante el periodo.

Febrero 9 de 2015 hasta el 7 de julio de 2015; Departamento de Cultura Física, con unaintensidad horaria de 342 horas durante el periodo.

Agosto 10 de 2015 hasta el 9 de diciembre de 2015; Departamento de Cultura Física, con unaintensidad horaria de 323 horas durante el periodo.

Febrero 10 de 2016 hasta el 17 de junio de 2016; Departamento de Cultura Física, con unaintensidad horaria de 342 horas durante el periodo.

Agosto 2 de 2016 hasta el 4 de diciembre de 2016; Departamento de Cultura Física, con unaintensidad horaria de 342 horas durante el periodo.

Febrero 1 de 2017 hasta el 9 de junio de 2017; Departamento de Cultura Física, con unaintensidad horaria de 342 horas durante el periodo.

Agosto 1 de 2017 hasta el 3 de diciembre de 2017; Departamento de Cultura Física, con unaintensidad horaria de 216 horas durante el periodo.

Enero 29 de 2018 hasta el 2 de junio de 2018; Departamento de Cultura Física, con unaintensidad horaria de 324 horas durante el periodo.

Agosto 1 de 2018 hasta el 9 de noviembre de 2018; Departamento de Cultura Física, con una intensidad horaria de 18 horas semanales.

Enero 21 de 2019 hasta el 16 de marzo de 2019, periodo en el que se retoman las actividades estipuladas para el calendario académico 2018-II; Departamento de Cultura Física, con una intensidad horaria de 18 horas semanales.

DOCENTE DE HORA CATEDRA					
Inicio:	**Fin:**	**Vinculación:**	**Cargo:**	**Departamento:**	**Dedicación:**
01/04/2019	10/08/2019	Docente de Hora Cátedra	Docente Catedrático	Cultura Física	288 horas /Periodo
02/09/2019	21/12/2019	Docente de Hora Cátedra	Docente Catedrático	Cultura Física	288 horas /Periodo
03/02/2020	13/06/2020	Docente de Hora Cátedra	Docente Catedrático	Cultura Física	342 horas /Periodo
03/08/2020	21/11/2020	Docente de Hora Cátedra	Docente Catedrático	Cultura Física	304 horas /Periodo
15/02/2021	11/09/2021	Docente de Hora Cátedra	Docente Catedrático	Cultura Física	342 horas /Periodo
11/10/2021 17/01/2022	20/02/2022 26/02/2022	Docente de Hora Cátedra	Docente Catedrático	Cultura Física	272 horas /Periodo
22/03/2022	23/07/2022	Docente de Hora Cátedra	Docente Catedrático	Cultura Física	272 horas /Periodo
22/08/2022 17/01/2023	20/12/2022 31/01/2023	Docente de Hora Cátedra	Docente Catedrático	Cultura Física	306 horas /Periodo
10/03/2023	08/07/2023	Docente de Hora Cátedra	Docente Catedrático	Cultura Física	323 horas /Periodo
22/08/2023	09/12/2023	Docente de Hora Cátedra	Docente Catedrático	Cultura Física	304 horas /Periodo
04/03/2024	06/07/2024	Docente de Hora Cátedra	Docente Catedrático	Cultura Física	324 horas /Periodo
20/08/2024	07/12/2024	Docente de Hora Cátedra	Docente Catedrático	Cultura Física	304 horas /Periodo
24/02/2025	21/06/2025	Docente de Hora Cátedra	Docente Catedrático	Cultura Física	304 horas /Periodo

CONTRATO ACTUAL – DOCENTE DE HORA CATEDRA					
Inicio:	**Fin:**	**Vinculación:**	**Cargo:**	**Departamento:**	**Dedicación:**
19/08/2025	06/12/2025	Docente de Hora Cátedra	Docente Catedrático	Cultura Física	304 horas /Periodo
Asignación Salarial: $ 4.248.020					

Se expide esta constancia a solicitud del interesado.

JORGE ANDRES DIAZ BERNAL
Jefe (E) Oficina de Gestión de Talento Humano

Proyectó: Harold Torres

Si desea solicitar la verificación de este certificado puede contactarnos escribiendo a la siguiente dirección de correo electrónico certificadoslaborales@correo.unicordoba.edu.co

CERTIFICADO DE AFILIACIÓN AL POS DE EPS SANITAS

La **EPS SANITAS** en desarrollo de su programa especial para la garantía y prestación del Plan Obligatorio de Salud denominado EPS **SANITAS**,

CERTIFICA

Que Fabio Andres Perea Velasquez, identificado(a) con CC número 15645398, está registrado(a) en el POS DE EPS SANITAS con la siguiente información:

TIPO Y NÚMERO DE IDENTIFICACIÓN	CC 15645398
NOMBRES Y APELLIDOS	Fabio Andres Perea Velasquez
TIPO DE AFILIADO	Titular
PARENTESCO	Titular
FECHA DE NACIMIENTO	17/09/1982
ESTADO DE LA AFILIACIÓN	0 Tiene Derecho A Cobertura Integral
CAUSA ESTADO DE AFILIACIÓN	10 - Cobertura Integral
FECHA DE INGRESO A EPS SANITAS	01/10/2022
FECHA DE RETIRO LABORAL / EPS SANITAS	Activo(a)
SEMANAS COTIZADAS EN EPS SANITAS	Sin semanas reportadas en EPS SANITAS
SEMANAS COTIZADAS EN OTRA EPS	Sin semanas reportadas en EPS SANITAS
SEMANAS COTIZADAS EN ÚLTIMO AÑO	Sin semanas reportadas en EPS SANITAS
RÉGIMEN	Contributivo
FECHA DE AFILIACIÓN AL RÉGIMEN	01/10/2022
NIVEL SISBEN	No aplica
EMPLEADOR(ES)*	

N.I.T. 891080031 UNIVERSIDADDECORDOBA Desde 20/08/2025 - Vigente CEDULA DE CIUDADANIA 15645398 FABIO ANDRES PEREA VELASQUEZ Desde 11/07/2025 Hasta 31/12/2025N.I.T. 891080031 UNIVERSIDADDECORDOBA Desde 07/03/2025 Hasta 21/06/2025CEDULA DE CIUDADANIA 15645398 FABIO ANDRES PEREA VELASQUEZ Desde 30/03/2025 Hasta 31/03/2025

Generado por interfaces 14/01/2026

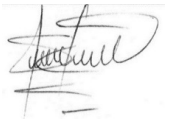
ESTE DOCUMENTO "NO ES VÁLIDO" PARA LA PRESTACIÓN DEL SERVICIO, NI PARA TRASLADOS.

LA ADMINISTRADORA COLOMBIANA DE PENSIONES - COLPENSIONES

CERTIFICA QUE

Verificada la base de datos de afiliados, el/la señor/a **FABIO ANDRES PEREA VELASQUEZ** identificado/a con documento de identidad **Cédula de Ciudadanía** número **15645398,** se encuentra afiliado/a desde **20/02/2007** al Régimen de Prima Media con Prestación Definida (RPM) administrado por la Administradora Colombiana de Pensiones **COLPENSIONES**.

La presente certificación se expide en Bogotá, el día 14 de enero de 2026.



Rosa Mercedes Nino Amaya
Dirección de Afiliaciones

Nota: Certificado generado desde la página Web. Este documento no es válido para el reconocimiento de prestaciones económicas, está sujeto a verificación y no tiene costo alguno.

VIGILADO SUPERINTENDENCIA FINANCIERA DE COLOMBIA

LABORO SALUD OCUPACIONAL S.A.S
Nit. 900728983 - 5
Dirección: CALLE 22 N° 12a - 03 B/ LAJULIA
Tel: 3003866789

INFORME MÉDICO OCUPACIONAL DE APTITUD

Tipo certificación: Ingreso ⊗ Periódico ○ Retiro ○ Post incapacidad ○ Caso ocupacional ○
Control ○ Reubicación ○ Ingreso al SVE ○ Trabajo en alturas ○



DATOS DEL PACIENTE

Fecha **15/01/2026 08:07:00** Empresa **PARTICULAR**

Nombre **FABIO ANDRES PEREA VELASQUEZ**

Cargo **CONTRATISTA** Doc. Identidad **CC 15645398**

SE PRACTICARON LOS SIGUIENTES PARACLÍNICOS

1 EXAMEN MEDICO OSTEOMUSCULAR	2	3
4	5	6
7	8	9

EXAMEN DE INGRESO	SI	NO	NO APLICA	FALTA INFORMACIÓN
Apto para el cargo	⊗	○	○	○
Aplazado	○	○	○	○
Apto con restricciones	○	○	○	○
Apto para trabajar en alturas	○	○	○	○
Apto para trabajar en espacios confinados	○	○	○	○
Apto para Trabajar con equipos de suministro de aire o autocontenido	○	○	○	○
Apto para participar en la brigada	○	○	○	○
Apto para el requerimiento del cargo de la empresa o contratista	○	○	○	○

EXAMEN PERIÓDICO	SI	NO
Apto para continuar desempeñando el cargo sin limitaciones	○	○
Requiere restricciones de actividades	○	○
Requiere reubicación laboral temporal	○	○
Requiere reubicación laboral permanente	○	○
Apto para trabajar en alturas	○	○
Apto para trabajar en espacios confinados	○	○
Apto para trabajar en alturas	○	○

EXAMEN DE RETIRO	SI	NO
Sospecha de enfermedad Profesional	○	○
Secuelas de Accidentes de Trabajo	○	○
Enfermedad Común	○	○

PROGRAMA DE VIGILANCIA EPIDEMIOLOGICA

Visual ○ Auditivo ○ Respiratorio ○ Cardiovascular ○ Psicosocial ○ Ergonómico ○ Otros ○

REMISIÓN	SI ○	NO ⊗	ARL	SI ○	NO ○	EPS	SI ○	NO ○

RECOMENDACIÓN ESPECIFICA:

1. MEJORAR HABITOS ALIMENTICIOS QUE PERMITAN ALCANZAR UN PESO SALUDABLE, REALIZAR ACTIVIDAD FISICA AEROBICA INTENSA, MINIMO 150 MINUTOS SEMANALES.

ANDREA LUCIA YANCES FUENTES
Especialidad: MEDICINA OCUPACIONAL
CC/RM 1067888431
LIC SST 002606

Fabio Andrés Perea

Trabajador: FABIO ANDRES PEREA VELASQUEZ
CC 15645398
Declaro que todos los datos registrados corresponden a la verdad

Captura Biometrica

INFORME MÉDICO OCUPACIONAL DE APTITUD

RECOMENDACIONES GENERALES:
- PAUSAS ACTIVAS
- HIGIENE POSTURAL
- USO CORRECTO DE ELEMENTOS DE PROTECCIÓN PERSONAL DE ACUERDO A SU CARGO.
- MANTENGA UN ALTO NIVEL DE CONCENTRACIÓN Y ATENCIÓN EN SU SITIO DE TRABAJO.
- CONTROL ANUAL POR SEGURIDAD Y SALUD EN EL TRABAJO
- HÁBITOS DE VIDA SALUDABLE.
- CAPACITACIÓN PARA EL CARGO A DESEMPEÑAR

Los resultados fueron consignados en una historia clínica ocupacional que reposará en nuestra IPS.

ANDREA LUCIA YANCES FUENTES
Especialidad: MEDICINA OCUPACIONAL
CC/RM 1067888431
LIC SST 002606

Trabajador: FABIO ANDRES PEREA VELASQUEZ
CC 15645398
Declaro que todos los datos registrados corresponden a la verdad

Captura Biometrica

DIAN

Formulario del Registro Único Tributario

001

2. Concepto 0 2 Actualización

4. Número de formulario 14965795513

(415)7707212489984(8020) 000001496579551 3

5. Número de Identificación Tributaria (NIT)	6. DV	12. Dirección seccional	14. Buzón electrónico
1 5 6 4 5 3 9 8	9	Impuestos y Aduanas de Montería 1 2	

IDENTIFICACIÓN

24. Tipo de contribuyente	25. Tipo de documento	26. Número de Identificación	
Persona natural o sucesión ilíquida 2	Cédula de Ciudadanía 1 3	1 5 6 4 5 3 9 8	

Lugar de expedición / 28. País	29. Departamento	30. Ciudad/Municipio
COLOMBIA 1 6 9	Córdoba 2 3	Cereté 1 6 2

31. Primer apellido	32. Segundo apellido	33. Primer nombre	34. Otros nombres
PEREA	VELASQUEZ	FABIO	ANDRES

35. Razón social

36. Nombre comercial	37. Sigla

UBICACIÓN

38. País	39. Departamento	40. Ciudad/Municipio
COLOMBIA 1 6 9	Córdoba 2 3	Montería 0 0 1

41. Dirección principal: CL 22 B 3 C W 27 BRR EL AMPARO

42. Correo electrónico: ffigo77@hotmail.com

43. Código postal	44. Teléfono 1	45. Teléfono 2
	3 0 0 2 1 4 0 5 6 4	

CLASIFICACIÓN

Actividad económica				Ocupación	
Actividad principal		**Actividad secundaria**		**Otras actividades**				
46. Código	47. Fecha inicio actividad	48. Código	49. Fecha inicio actividad	50. Código	1	2	51. Código	52. Número establecimientos
5 6 2 1	2 0 0 6 0 1 2 5	8 2 3 0	2 0 0 6 0 1 2 5				3 4 7 5	

Responsabilidades, Calidades y Atributos

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
53. Código	5	4	9	5	0																					

05- Impto. renta y compl. régimen ordinar

49 - No responsable de IVA

50 - No responsable de Consumo restauran

Usuarios aduaneros										
	1	2	3	4	5	6	7	8	9	10
54. Código										
	11	12	13	14	15	16	17	18	19	20

Exportadores					
55. Forma	56. Tipo	Servicio	1	2	3
		57. Modo			
		58. CPC			

IMPORTANTE: Sin perjuicio de las actualizaciones a que haya lugar, la inscripción en el Registro Único Tributario -RUT-, tendrá vigencia indefinida y en consecuencia no se exigirá su renovación

Para uso exclusivo de la DIAN

59. Anexos SI [ ] NO [X] 60. No. de Folios: 0

La información suministrada a través del formulario oficial de inscripción, actualización, suspensión y cancelación del Registro Único Tributario (RUT), deberá ser exacta y veraz; en caso de constatar inexactitud en alguno de los datos suministrados se adelantarán los procedimientos administrativos sancionatorios o de suspensión, según el caso, Parágrafo del artículo 1.6.1.2.6 del Decreto 1625 del 2016. De igual manera al formalizar el trámite el usuario fue informado y acepta la política de tratamiento de datos ley 1581 de 2012.

Firma del solicitante:

Sin perjuicio de las verificaciones que la DIAN realice.

Firma autorizada:

984. Nombre PEREA VELASQUEZ FABIO ANDRES

985. Cargo CONTRIBUYENTE

COPIA CERTIFICADO DOCUMENTO SIN COSTO

DIAN

Formulario del Registro Único Tributario
Establecimientos

001

Espacio reservado para la DIAN

4. Número de formulario: 14965795513

(415)7707212489984(8020) **000001496579551 3**

5. Número de Identificación Tributaria (NIT)	6. DV	12. Dirección seccional	14. Buzón electrónico
1 5 6 4 5 3 9 8		Impuestos y Aduanas de Montería 1 2	

Establecimientos, agencias, sucursales, oficinas, sedes o negocios entre otros

1

160. Tipo de establecimiento	161. Actividad económica	
Establecimiento de comerci 0 2	Catering para eventos 5 6 2 1	

162. Nombre del establecimiento: EVENTOS CAMPO DAVID

163. Departamento	164. Ciudad/Municipio	
Córdoba 2 3	Montería 0 0 1	

165. Dirección: CL 1 B 1 32 BRR CALIFORNIA VTE MONTERIA - MOCARI VIA A BALMORAL

166. Número de matrícula mercantil	167. Fecha de la matrícula mercantil	
2 1 1 5 7 0	2 0 2 3 1 1 2 2	
168. Teléfono	169. Fecha de cierre	

2

160. Tipo de establecimiento	161. Actividad económica	

162. Nombre del establecimiento:

163. Departamento	164. Ciudad/Municipio	

165. Dirección:

166. Número de matrícula mercantil	167. Fecha de la matrícula mercantil	
168. Teléfono	169. Fecha de cierre	

3

160. Tipo de establecimiento	161. Actividad económica	

162. Nombre del establecimiento:

163. Departamento	164. Ciudad/Municipio	

165. Dirección:

166. Número de matrícula mercantil	167. Fecha de la matrícula mercantil	
168. Teléfono	169. Fecha de cierre	

COPIA CERTIFICADO DOCUMENTO SIN COSTO

Certificación Bancaria

Martes, 13 de enero de 2026

A quien le interese

Bancolombia S.A. se permite informar que FABIO ANDRES PEREA VELASQUEZ identificado(a) con CC 15645398, a la fecha de expedición de esta certificación, tiene con el Banco los siguientes productos:

Producto	No. Producto	Fecha Apertura aaaa-mm-dd	Estado	Saldo
Cuenta de ahorros	16650095387	2015-10-26	Activo	*****

***Importante:** Esta constancia solo hace referencia a los productos mencionados anteriormente.
*Si desea verificar la veracidad de esta información, puede comunicarse con la Sucursal Telefónica Bancolombia a los siguientes números: Medellín - Local: (57-4) 510 90 00 - Bogotá - Local: (57-1) 343 00 00 - Barranquilla - Local: (57-5) 361 88 88 - Cali - Local: (57-2) 554 05 05 Resto del país: 01800 09 12345.Sucursales telefónicas en el exterior: España(34) 900 995 717 - Estados Unidos(1) 1 866 379 97 14.

Catalina Cortés Uribe.
Gerente Servicios Contact Center & BPO.

VIGILADO SUPERINTENDENCIA FINANCIERA DE COLOMBIA
BANCOLOMBIA S.A. Establecimiento Bancario.

Bancolombia

Bancolombia nunca solicitará sus datos personales o de sus productos bancarios mediante vínculos de correo electrónico. En caso de recibir alguno, repórtelo de inmediato a correosospechoso@bancolombia.com.co

Función Pública

PUBLICACIÓN PROACTIVA DECLARACIÓN DE BIENES Y RENTAS Y REGISTRO DE CONFLICTOS DE INTERÉS
(Ley 2013 de 2019, Ley 1437 de 2011, 734 de 2002 y 2003 de 2019)

Tipo de declaración	INGRESO	Fecha de publicación	2026-01-19 09:20

Nombres y apellidos completos

Primer nombre	Segundo nombre	Primer apellido	Segundo apellido
FABIO	ANDRES	PEREA	VELASQUEZ

Documento de identificación

Tipo	CEDULA DE CIUDADANIA	Número	15645398

Lugar de nacimiento

País	COLOMBIA	Departamento	ATLÁNTICO	Municipio	BARRANQUILLA

Lugar de domicilio

País	COLOMBIA	Departamento	CÓRDOBA	Municipio	MONTERÍA

Nombre de la entidad/organismo/institución/persona jurídica pública o privada que presten función pública o servicios públicos o que administren, celebren contratos y ejecuten bienes o recursos públicos/Notarías/Curadurías/ u otra donde trabaje	INSTITUTO MUNICIPAL PARA EL DEPORTE Y LA RECREACION IMDER

Lugar de sede

País	COLOMBIA	Departamento	CÓRDOBA	Municipio	MONTERÍA

Dirección	[" CARRERA 21 - 19A Villa Olimpica de Occidente"]

Cargo o función que cumple	CONTRATISTA

Tipo de sujeto obligado de acuerdo con el artículo 2 de la Ley 2013 de 2019: Persona natural y jurídica, pública o privada, que presten función pública, que presten servicios públicos respecto de la información directamente relacionada con la prestación del servicio público.

1. DECLARACIÓN JURAMENTADA DE BIENES Y RENTAS

De acuerdo con lo consagrado en la Ley 2013 de 2019, a continuación procedo a publicar y divulgar proactivamente mi declaración de bienes y rentas y manifiesto que los únicos bienes y rentas que poseo a la fecha, en forma personal o por interpuesta persona, son los que relaciono a continuación.

1.1. DE INGRESOS, BIENES Y ACREENCIAS

Los ingresos y rentas que obtuve en el año gravable 2025 fueron:

CONCEPTO	VALOR
Salarios y demás ingresos laborales	$38.000.000,00
Cesantías e intereses de cesantías	$2.000.000,00
Gastos de representación	$0,00
Arriendos	$2.000.000,00
Honorarios	$4.500.000,00
Otros ingresos y rentas	
TOTAL	$46.500.000,00

Las cuentas bancarias de las que soy titular en Colombia y en el exterior son:

Tipo de cuenta	Sede de la cuenta (País)	Saldo total de la cuenta a diciembre 31 del año inmediatamente anterior
CUENTA DE AHORROS	COLOMBIA	$2.000.000,00

Mis bienes patrimoniales son los siguientes:

Tipo de bien	País	Departamento	Municipio	Valor
MOTO	COLOMBIA	CÓRDOBA	MONTERÍA	$14.000.000,00

Mis acreencias y obligaciones vigentes a la fecha son:

Concepto	Saldo
PRESTAMOS	$32.000.000,00

1.2. PARTICIPACIÓN EN JUNTAS, CONSEJOS, CORPORACIONES, SOCIEDADES Y/O ASOCIACIONES

Tengo participación en juntas, consejos o directivos: Sí [ ] No [X]

En la actualidad participo como miembro de las siguientes Juntas o Consejos Directivos:

Nombre entidad o institución	Órgano	Calidad de miembro	País

Tengo participación en corporaciones, sociedades y asociaciones: Sí [ ] No [X]

A la fecha soy socio de las siguientes corporaciones, sociedades y/o asociaciones:

Nombre corporación, sociedad o asociación	Tipo	Calidad de socio	País

1.3. DECLARACIÓN DE LAS ACTIVIDADES ECONÓMICAS DE CARÁCTER PRIVADO

Tengo actividades económicas privadas: Sí [ ] No [X]

Las actividades económicas de carácter privado, adicionales a las declaradas anteriormente, que he venido desarrollando de forma ocasional o permanente son las siguientes:

Detalle de las actividades	Forma participación

2. CONFLICTOS DE INTERÉS

De acuerdo con lo consagrado en la Ley 2013 de 2019, a continuación procedo a publicar y divulgar proactivamente el registro de la información que puede ser susceptible de generarme un conflicto de interés, así como aquella relacionada con los intereses de mi cónyuge o compañero(a) permanente, parientes y socios de hecho o de derecho.

2.1. INFORMACIÓN DE CÓNYUGE O COMPAÑERO(A) PERMANENTE

Tengo cónyuge o compañero(a) permanente: Sí [X] No [ ]

Los intereses personales de mi cónyuge o compañero o compañera permanente son susceptibles de generar una posible situación de conflicto de interés frente a la labor o actividad que desempeño: Sí [ ] No [X]

Primer nombre	Segundo nombre	Primer apellido	Segundo apellido
LEIDY	LUZ	GONZALEZ	PEREZ

Tipo documento: CEDULA DE CIUDADANIA Número: 43253592

Descripción del potencial conflicto de interés con su cónyuge o compañero(a) permanente:

2.2. INFORMACIÓN DE PARIENTES POR CONSANGUINIDAD, AFINIDAD Y CIVIL

Tengo parientes hasta el cuarto grado de consanguinidad, segundo de afinidad o primero civil con Intereses personales que son susceptibles de generar una posible situación de conflicto de interés frente a la labor o actividad que desempeño: Sí [ ] No [X]

A continuación presento la información de los parientes hasta el cuarto grado de consanguinidad, segundo de afinidad y primero civil que son susceptibles de generar conflicto de interés frente a la labor o actividad que desempeño.

De acuerdo con la Ley 2003 de 2019, los congresistas deben registrar sus parientes hasta el segundo grado de consanguinidad, segundo de afinidad y primero civil si son susceptibles de generar conflicto de interés frente a la labor o actividad que desempeñan.

Parentesco	Pariente	Tipo de documento de identidad	Documento de identidad	Descripción del potencial conflicto de interés

2.3. INTERÉS DIRECTO O ACTUACIONES DENTRO DEL AÑO ANTERIOR

Tuve intereses directos o actué como representante, asesor, presidente, gerente, director, miembro de junta directiva o socio de gremio, sindicato, sociedad, asociación, grupo social u organización con ánimo o sin ánimo de lucro y esto puede influir en mis decisiones y acciones en el desempeño de mi cargo actual:

Sí [ ] No [X]

Dentro del año anterior tuve interés directo o actué como representante, asesor, presidente, gerente, director, miembro de junta directiva o socio de gremio, sindicato, sociedad, asociación, grupo social u organización con ánimo o sin ánimo de lucro (nacional o extranjera), y a continuación describo cómo puede influir en las decisiones y acciones de mi cargo actual:

2.4. OTRAS INVERSIONES

Tengo fideicomisos en Colombia o en el exterior: Sí [ ] No [X]

Los fideicomisos y encargos fiduciarios de los cuales soy constituyente o beneficiario en Colombia y en el exterior son:

Nombre del fideicomiso o encargo fiduciario	Calidad	Valor	País

Tengo inversiones en Colombia o en el exterior: Sí [ ] No [X]

Las inversiones en bonos, fondos de inversión, fondos de ahorro voluntario y otras que tengo en Colombia y en el exterior son:

Tipo de inversión	Valor	País

2.5. DONACIONES QUE REPRESENTARON REDUCCIONES EN LA DECLARACIÓN DE RENTA

Realicé donaciones: Sí [ ] No [X]

Las donaciones que me representaron reducciones en la declaración de renta del último año gravable son:

Nombre entidad	Valor

2.6. POTENCIALES CONFLICTOS DE INTERÉS

Tengo potenciales conflictos personales de interés: Sí [ ] No [X]

Los conflictos de interés pueden generarse a partir de, por ejemplo:
> Actividades y negocios que realiza o tiene con socio o socios de hecho o de derecho.
> Establecimientos que posee.
> Litigio o controversia ante autoridades administrativas o jurisdiccionales.
> Haber hecho parte de listas de candidatos a cuerpos colegiados de elección popular.

Los potenciales conflictos personales de interés que tengo son:

DIAN

Declaración de renta y complementario personas naturales y asimiladas residentes y sucesiones ilíquidas de causantes residentes

PRIVADA

210

1. Año: 2024

Espacio reservado para la DIAN

4. Número de formulario: 2118739693519

(415)7707212489984(8020) 000211873969351 9

Datos del declarante

5. Número de Identificación Tributaria (NIT)	6.DV	7. Primer apellido	8. Segundo apellido	9. Primer nombre	10. Otros nombres	12.Cod. Dirección seccional
1564539	8 9	PEREA	VELASQUEZ	FABIO	ANDRES	12

24. Actividad económica principal: 0010 | Si es una corrección indique: | 25. Cód. | 26. No. Formulario anterior | 27. Fracción año gravable siguiente | 28. Uno por ciento (1%) de compras con factura electrónica: 216,000

Patrimonio	Total patrimonio bruto	29	110,000,000	Deudas	30	45,248,000	Total patrimonio líquido	31	64,752,000

Cédula general

Conceptos/rentas		Rentas de trabajo		Rentas de trabajo que no provengan de una relación laboral o legal y reglamentaria		Rentas de capital		Rentas no laborales	
Ingresos brutos		32	40,331,000	43	0	58	0	74	800,000
Devoluciones, rebajas y descuentos								75	0
Ingresos no constitutivos de renta		33	2,622,000	44	0	59	0	76	0
Costos y deducciones procedentes				45	0	60	0	77	0
Renta líquida		**34**	37,709,000	**46**	0	**61**	0	**78**	800,000
Rentas líquidas pasivas - ECE						62	0	79	0
Rentas exentas	Aportes voluntarios AFC, FVP y AVC	35	0	47	0	63	0	80	0
	Otras rentas exentas	36	9,427,000	48	0	64	0	81	0
	Total rentas exentas	**37**	9,427,000	**49**	0	**65**	0	**82**	0
Deducciones imputables	Intereses de vivienda	38	0	50	0	66	0	83	0
	Otras deducciones imputables	39	0	51	0	67	0	84	0
	Total deducciones imputables	**40**	0	**52**	0	**68**	0	**85**	0
Rentas exentas y/o deduc. imputables (Limitadas)		**41**	9,427,000	**53**	0	**69**	0	**86**	0
Renta líquida ordinaria del ejercicio				**54**	0	**70**	0	**87**	800,000
Pérdida líquida del ejercicio				**55**	0	**71**	0	**88**	0
Compensaciones por pérdidas				56	0	72	0	89	0
Renta líquida ordinaria		**42**	28,282,000	**57**	0	**73**	0	**90**	800,000

Ren. líquida céd. gen.	**91**	38,509,000	**Ren. ex. y ded. imp. li.**	**92**	16,420,000	**R. líq. ord. cédula gen.**	**93**	22,089,000	Comp. pérdidas año 2018 y ant. 94: 0
Comp. exc. ren. presuntiva	95	0	Rentas gravables	96	0	**R. líq. grav. cédula gen.**	**97**	22,089,000	Renta presuntiva 98: 0

Cédula de pensiones

Ingresos brutos por rentas de pensiones del país y del exterior	99	0
Ingresos no constitutivos de renta	100	0
Renta líquida	**101**	0
Rentas exentas de pensiones	102	0
Renta líquida gravable cédula de pensiones	**103**	0

Cédula de dividendos y/o participaciones

Dividendos y participaciones 2016 y anteriores, y otros	104	0
Ingresos no constitutivos de renta	105	0
Renta líquida ordinaria año 2016 y anteriores	**106**	0
1a. Subcédula años 2017 y siguientes numeral 3 art. 49 del E.T.	107	0
2a. Subcédula años 2017 y siguientes parágrafo 2 art. 49 del E.T.	108	0
Dividendos y participaciones recibidas del exterior	109	0
Rentas exentas de la casilla 109	110	0
Renta liquida gravable (Cédula general o renta presuntiva, de pensiones y de dividendos y participaciones, art. 241 E.T.)	111	22,089,000

Ganancias ocasionales

Ingresos por ganancias ocasionales del país y del exterior	112	0
Costos por ganancias ocasionales	113	0
Ganancias ocasionales no gravadas y exentas	114	0
Ganancias ocasionales gravables	**115**	0

Liquidación privada

Impuesto sobre las rentas líquidas gravables: Cédula general, de pensiones y de dividendos y participaciones	116	0
Renta presuntiva, de pensiones y de dividendos y participaciones	117	0
Por dividendos y participaciones año 2017 y siguientes, 2a subcédula (Art. 240 E.T.)	118	0
Por dividendos y participaciones año 2016	119	0
Por dividendos y participaciones recibidas del exterior	120	0
Total impuesto sobre las rentas líquidas gravables	**121**	0

Descuentos tributarios				
Imp. pagados en el exterior	122	0	Donaciones 123	0
Dividendos., particip. y otros	124	0	Total descuentos trib. **125**	0

Impuesto neto de renta	**126**	0
Impuesto de ganancias ocasionales	**127**	0
Descuento por impuestos pagados en el exterior por ganancias ocasionales	128	0
Total impuesto a cargo	**129**	0
Anticipo renta liquidado año gravable anterior	130	0
Saldo a favor del año gravable anterior sin solicitud de devolución y/o compensación	131	26,000
Retenciones año gravable a declarar	132	0
Anticipo renta para el año gravable siguiente	133	0

Saldo a pagar por impuesto	134	0	Sanciones	135	0	Total saldo a pagar	136	0	Total saldo a favor **137**: 26,000
Número de dependientes económicos	138	2	Adición por dependientes a la casilla 92	139	6,777,000	Ud. superó tope indicativo art. 336-1 del E.T., marque X	140	0	Aporte voluntario 141: 0

981. Cód. Representación | Firma del declarante o de quien lo representa

982. Cód. Contador | Firma contador | 994. Con salvedades

983. No. Tarjeta profesional

997. Espacio exclusivo para uso de la entidad recaudadora

DIAN — Fecha Acuse de Recibo — Firmado

2025-10-18 / 02:13:27 PM

2025-10-18 13:27

980. Pago total $: 0

996. Espacio para el número interno de la DIAN/ Adhesivo

91900395382977

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RECIBIDO

Función Pública

Verificados los resultados del participante en el curso virtual

Función Pública certifica que:

Fabio Andrés Perea Velásquez

C.C 15.645.398

Participó y completó el curso virtual

Integridad, transparencia y lucha contra la corrupción

Con una duración de 20 horas.

Bogotá D.C., 14 de enero 2026

Francisco Camargo Salas
Director de Empleo Público

Código: 769427950000